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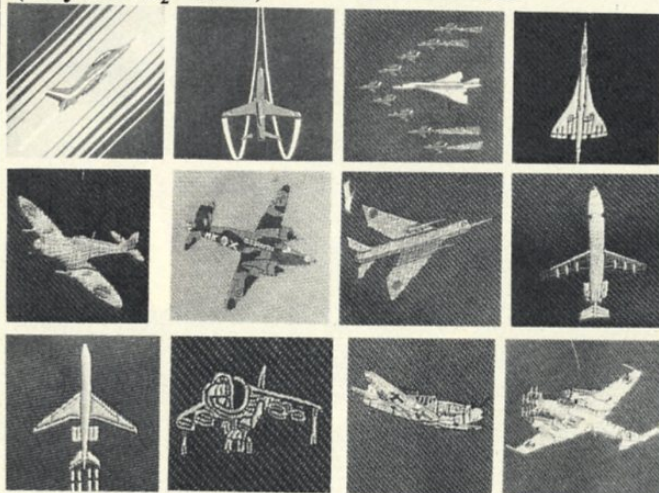
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aircraft illustrated

November 1982 Vol 15 No 11

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Cover: An unusual angle on RAF Hercules C1, XV196, parked on the apron at Wideawake Airfield, Ascension Island. The first article in a two part feature on the island and its operations starts on page 502, this issue.
Photo: Allan Burney

Frontispiece: Making its first overseas visit from the US, Rockwell International B-1A, 76-0174, arrived at Farnborough on 2 September to be displayed statically at the 1982 SBAC International Air Show. Coverage of Farnborough 82 is featured on pages 486-490 and 520-521. Photo: Peter Gilchrist

This picture: With smoke streaming from its two wingtip pods, the General Dynamics F-16 climbs steeply out at the start of its impressive display at Farnborough 82. Photo: Peter Gilchrist

★ Due to space restrictions in this month's issue, the regular features *airbooks* and *airmail* have been omitted. However, both features will return next month in an edition that will also include the *Saab Viggen* in colour, a retrospective look at the *VC10* in civil service and a complete index to volume 15 (1982) of *Aircraft Illustrated*

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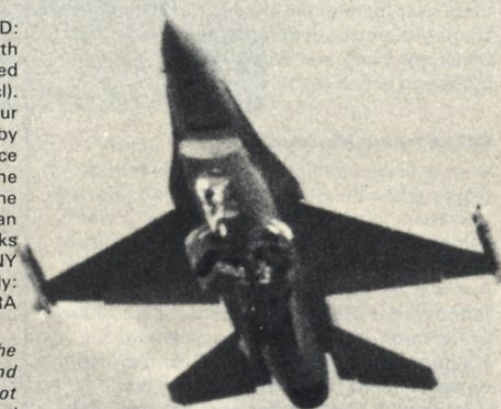
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2001 Competition

The response to this competition was encouraging. Many of the ideas put forward showed much imagination and careful thought even amongst those choosing the most popular topics of space flight and the preservation of High Speed Train units! After careful consideration the judges have awarded joint first prizes to A. McNeil (aged 16) of Bury for his 'When diesel shall pollute no more...' — the advent of electric passenger transport and Christopher Burkett (aged 14) of Huntingdon for 'Stansted HEATs up' which discussed use of the Rockwell HEAT (Hypersonic Extra-stratospheric Automated Transport).

Such was the standard of so many of the remaining entries that second prizes of Ian Allan books were awarded to a further 29 contestants. These winners have been notified.



Gp Capt Sir Douglas Bader

Gp Capt Sir Douglas Bader CBE DSO* DFC* died on 5 September 1982 at the age of 72. Already a legendary figure in aviation and the wider world, Douglas Bader's life and work were a tribute to his great character and personal courage in overcoming the physical disability stemming from the loss of both legs in an air crash in 1931. His persistent attempts to resume his career as a pilot in the Royal Air Force during the 1930s led to his accomplished service in WW2; he flew as a fighter pilot during the Battle of Britain and commanded No 242 Squadron as well as leading larger formations while developing the 'big wing' tactics employed in the concluding phases of the 'Battle'. He was taken prisoner in 1941 after a mid-air collision between his Spitfire and a Bf109 during combat over France and spent the remainder of the war as a POW, persistent attempts to escape leading to his confinement in Colditz. After the war Bader took up a new career in civil aviation. He also devoted a large measure of his time to helping and encouraging his fellow disabled in all spheres of life to overcome the effects of their physical limitations, his commitment to this rehabilitation work being recognised in the conferment of knighthood in 1976. And all the while, his interest and involvement in aviation remained total; epitomised for example, by his role as President of the International Air Tattoo.

Sir Douglas Bader was nationally regarded with an affection and esteem that reflected his remarkable resilience in conquering considerable personal adversity, and the dedication with which he sought to inspire others to the achievement of equally full lives.

Paul Humphreys

Shop!

First; let's look back together at Britain's major aerospace show which closed its doors a few weeks ago and put its feet up for another two years. Before Farnborough 82 finally 'nods off' perhaps I can be permitted a few valedictory comments.

Without doubt this 25th SBAC Exhibition and Display, staged at Farnborough, was the busiest for many a long year, possibly the busiest ever. From what ever standpoint the show's superlatives are viewed — most exhibitors, most halls, most new aircraft, volume of trade visitors — they all add up to one thing. British aerospace products are beginning to bring home the bacon again. Our globe-trotting salesmen are looking and sounding confident that their week on that Hampshire airfield was well spent and, that with only a modicum of good luck and timing, their order books will be worth many thousands of millions of pounds over the next few years. Now you and I both know only too well that all those orders announced during the Show had been in negotiation for a long time, possibly since Farnborough 80, and had been released at a time when the world was geared and waiting for aerospace news. It'll be a long time before the customers who visited Farnborough 82 will have signed on the dotted line. It'll be even longer before the full benefits of these orders will be felt in the workshops and factories of Britain's aerospace industry. But, in the long term, undoubtedly they spell work and jobs for many thousands of the industry's employees. They may not create a whole raft of additional jobs, but at least they will help to provide continuity of employment in many parts of the UK. And that can't be bad.

And while we shout 'Huzzah' we should not overlook the sad fact that many of the potential overseas customers at Farnborough were there as the result of Britain's most dearly bought victory in the Battle of the Falklands. They came, eager to see and to buy our highly effective military aircraft, equipment, and missile systems. Happily, these technological achievements, allied to the skill, daring and bravery of our servicemen, will rub off on the aerospace industry as a whole and cause civil aircraft manufacturers and operators around the world to examine more closely British products in their particular field.

Creepy crawly

One of the more incongruous exhibits at the show was a 402lb wheelbarrow! Not your average garden sort one hastens to add, but one mounted on caterpillar tracks — again, not your average garden caterpillar — and which looked like a miniature tank carrying a television camera. According to Morfax Ltd, which makes it, 'Wheelbarrow Mk7 is the latest version of the only Remote Controlled Explosive Ordnance Vehicle used by the British Army. It is the most effective concept for investigation, neutralisation and removal of hazardous devices'. In other words, if you want a good messing device to take a closer look at, defuse and then cart away a terrorist's bomb and do it all by remote control, then get in touch with Morfax. This is yet another bit of technological fall-out from some longpast aerospace programme which is benefiting other spheres of defence activity.

While on the 'incongruity kick', one exhibitor whose name seemed most congruous was Wallop Industries who produce a whole range of confusing products; more correctly, that should be 'products to confuse'. Among them are Skysnare tethered airborne obstructions, Barricade, Stockade and Pallisade naval decoys which release chaff and infra-red source decoys for use in aircraft, and Cascade, a similar system for helicopter crews to shovel out of their 'choppers'. Oh — and then there's the solar-powered ground-based Rampart which fires off chaff, infra-red flares and makes smoke to completely fox heat-seeking, radar-guided and laser or TV-guided missiles. Whew! How's that for crash, bang, Wallop?

The name's the same

One wonders what the late, great Sir Richard Fairey would have thought about Farnborough 82. Not one but three Fireflies in the flying display; true, they were examples of the new British light two-seat trainer built by Slingsby, but Sir Richard would have been delighted that the world's first aerobatic trainer to be built from glass re-inforced plastic should bear the name of his renowned fighter/bomber of yesteryear. Only a blown engine kept the sole surviving example of the original Firefly from appearing in the display on the public days. Fred Slingsby, too, would have been pretty excited about this latest product from his Kirbymoorside factory which has produced so many excellent gliders and sailplanes. So one wonders what 'Sling' would think of that busy little 160hp Lycoming engine up at the sharp end of his company's new aeroplane.

Crowdstopper

Overheard during the opening item of the flying display. 'I hear that Airship Industries have sold some Skyships to Venezuela. They're using them over there to promote family planning. They fly them about at night, all lit up like Christmas trees, and everyone keeps rushing outside to watch them'.

What noise annoys?

In an era when diminishing decibels are the 'in' things, when the Airbus and BAe 146 offer low operating noise as a major sales plus, it was surprising to find two aircraft in which noise was a distracting feature of their display. The first was the Skyship 500, whose two ducted fans at times droned and moaned like a brace of Harvards on the loose. The other was the Fieldmaster. Perhaps Desmond Norman, its designer, plans to zap the bugs and boll weevils with decibels and save the cost of all that toxic spray which cunningly squirts out of the aerofoil section trailing edge flaps.

Overheard in 1940

'... well you know how the paper never tears off at the perforations; just bore a row of holes across the wing, that'll stop them falling off in a power dive.' Ah — you've heard it. So have the designers at McDonnell Douglas where they, too, are boring holes in wings, but with a different end in view. An aircraft wing perforated with millions of tiny holes is being studied in wind tunnel tests as a way to reduce drag and fuel consumption. 'MacDac' engineers believe that the holes will help to promote laminar flow over the wing by stabilising the boundary layer and avoiding turbulence. Hey presto — or whatever they say in St Louis — the clutching hand effect is minimised. So are engine power requirements. Ergo; so is fuel burn.

airnews SPECIAL

Peter Gilchrist

WITH the Farnborough showground so clearly dominated by five completely new airliners, there was an uncomfortable irony in the fact that the commercial side of the industry — so often in the past a spearhead of health and confidence — should find itself in the depths of a painful and apparently insoluble recession. While most of the 'camp-fire' talk around the halls and chalets was optimistically devoted to the new technologies that would eventually lead everyone out of the wilderness, the men with real up-front money had evidently been hard to find, and the traditional crop of trend-setting orders and significant news stories was virtually a thing of the past.

The show kicked-off on a slightly sour note with Airbus Industries and Boeing openly squabbling over fuel-burn figures for the A310 and 767. The Americans had apparently published performance comparisons that showed the A310 in an unfavourable light when measured against the 767. Airbus claimed that the figures used were wholly inaccurate and suggested that Boeing was fully aware of the European consortium's ability to prove its point. Whatever the relative points of this complex argument, both companies agreed that they were down on anticipated sales, although Airbus is claiming 83 firm orders during the last two years, well over 50% of the total world sales of twin-aisle aircraft since the last Farnborough. Boeing reports better than expected performance figures for both its new aircraft and is particularly pleased with the 757, which it claims 'can beat anything over short ranges'.

The partial marriage between Aeritalia and Aerospatiale was given a measure of credibility around the exhibition halls by frequent exposure to models of their jointly projected ATR-42 regional airliner. Originally proposed in July 1980, this government-backed programme is now making good progress towards a first flight in September 1984. Over 50 'meaningful deposits' are claimed already.

Running squarely against the mainstream of recent opinion, the French AF has opted for another generation of piston-engined basic trainers in the form of the Aerospatiale Epsilon, first flown in December 1979 and making its Farnborough debut this year. The AS332B Super Puma was also shown for the first time, and with orders already approaching 90, this new and tougher breed of cat could be set to follow in the 'paw-prints' of at least some of the 700 original Pumas.

With Avgas becoming increasingly expensive and difficult to obtain in some parts of the world, the move towards small turbine

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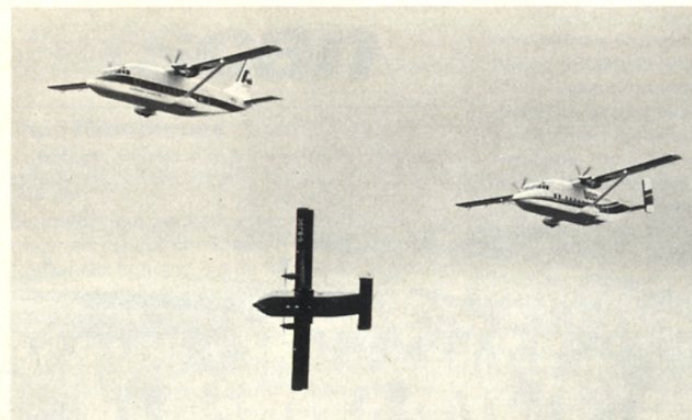


Above: A view across part of the static park at this year's Farnborough. In the foreground is USAF F-15C Eagle and other prominent aircraft include RAN AF Gulfstream III, the Boeing 767, Fokker F28-4000 and the nose of Lockheed P-3C Orion. All photos Peter Gilchrist unless otherwise credited

Left: Making its first appearance at Farnborough was the Airbus Industrie A310. The large airliner gave a graceful flying display that impressed all.



NOVEMBER 1982



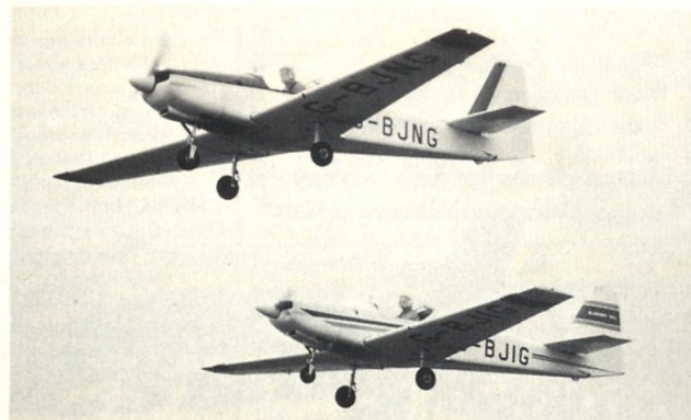
able undercarriage that will give the underwing search radar a full 360° field of view.

It was revealed during the show that **Airship Industries** was carrying a sophisticated radar aboard Skyship 500, and that several orders can be expected soon. The customers concerned are governments, who will need the craft for coastal patrol and scientific work.

British Aerospace was adopting a surprisingly low profile on its recent Task Force experience — particularly with Harrier and Rapier — and emphasising the positive future for its expanding product range. Two new aircraft were announced during the show, one of them the long-awaited, stretched and re-engined 748. The company was playing down the humble origins of the new ATP (Advanced Turboprop) and focusing on the newness of an 18.5ft fuselage stretch, the swept fin, and the Pratt & Whitney 100/9 engines, each developing an initial 2,500shp and driving a six-bladed, high-technology propeller. The front end of the aeroplane is completely new, and BAe expects to be able to offer CRT flightdeck displays as an option shortly after the planned service entry date of March 1986. The company is looking at probable sales of 200 aircraft, with British Midland as a possible launch customer.

Perhaps the most significant story of the week — particularly as far as BAe is concerned — was the decision to go ahead with a technology demonstrator for the ACA (Agile Combat Aircraft). No decision has been made on production or service entry because the aircraft, as presently defined, is little more than a research prototype. The programme will draw on the collective resources of the Tornado team — Aeritalia, BAe and MBB — and could result in a first flight as early as 1986. Although many detail decisions have yet to be made, the new fighter is beginning to come together as a single-seat, cranked wing canard, with two RB-199 engines and using much of the avionics pack developed for Tornado.

The BAe 146 is now well into its development programme, with five aircraft flying and nearly 1,000hrs already logged. Tropical testing is underway and British Air Ferries has been contracted to undergo an extensive route-proving programme. Although the aircraft is impressively quiet and fuel-efficient, the sales figures achieved so far must be disappointing to the marketing group at Hatfield.



It was announced during the show that Agusta has acquired **Caproni Vizzola**, and a further five C22J ultra-light jet trainers will now be built in anticipation of future orders.

After the appearance of the TNT technology prototype at the 1980 show, both the -100 and -200 models of the impressive new **Dornier 228** were brought to Farnborough this year. The 15-passenger -100 has already started deliveries from Munich and the -200 actually received its final certification during the show.

Edgley Aircraft appeared at Farnborough this year with production plans for 200 Opticas. Financial backing has now been secured and the company will go into production from the newly-acquired Old Sarum

Above left: The Shorts trio of 'boxy' transports headed by the newly certificated Shorts 360, displayed in the colours of Allegheny Commuter. Behind it is Shorts 330 G-BKDO of Eastern Airways while a Skyvan banks steeply away to port. Photo: Graham Finch

Above: Two of the new British light two-seat trainer built by Slingsby holding formation during Farnborough 82. Photo: Peter R. March

Above: 1982 marked the Farnborough debut of a number of types, one of the most notable being the Boeing 757.

Airfield in Wiltshire. The first 25 aircraft have already been spoken for and will be going to an Australian distributor.

Another newcomer this year was the **Embraer Tucano**, now in quantity produc-



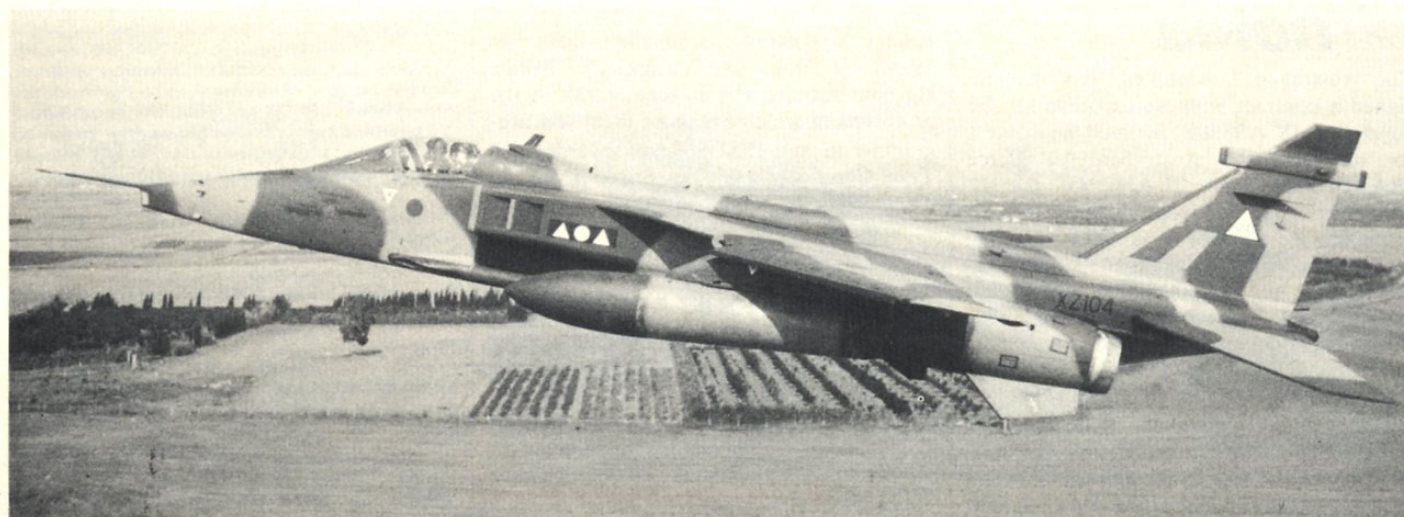
Top left: In its new guise as parent company to SIAI-Marchetti, Agusta presented the appropriately registered SF600TP Cangaro.

Top right: The RAF's new tanker VC10K2, ZA141, heads a Nimrod AEW3 fitted with a refuelling probe. Although these aircraft did not land at the air show, they carried out several flypasts throughout the week.

Above: Fitted with an array of interesting 'bumps' and aerials, the Dassault-Breguet Atlantic ANG, ATL201, lands at Farnborough.

Left: The stretched -200 model of the Dornier 228 received its final certification during the show.

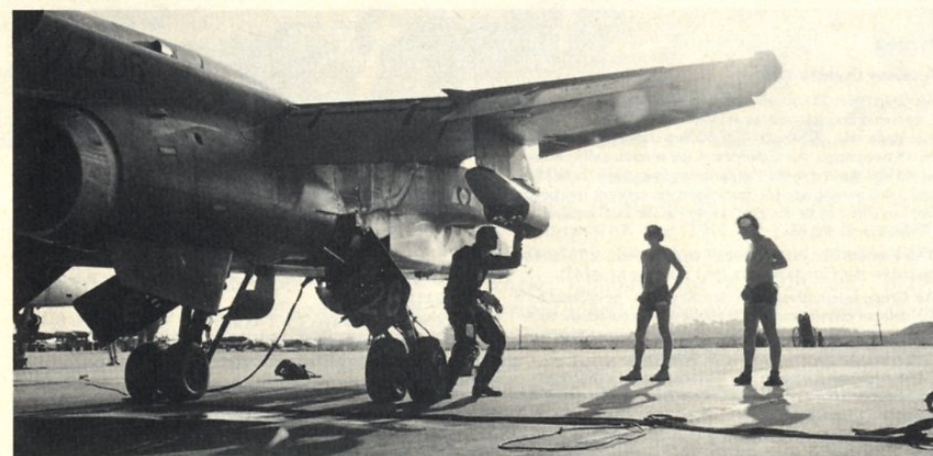




JAGUARS at 'Deci'

Text by **RAF Germany/Public Relations**

Photos by **Barry Ellson/Command Public Relations**



Top: No 2 Squadron RAF Jaguar XZ104 climbing away from Decimomannu, Sardinia on the way to the Capo Frasca range.

Above: A quick check on the CBLs (carrier bomb light stores) before a mission out of 'Deci'.

Below: The No 2 Squadron flightline at Decimomannu in Sardinia.



NO 2 Squadron RAF, which celebrates its 70th anniversary this year, has recently returned from a deployment to Sardinia. Normally based at RAF Laarbruch, West Germany, and operating Jaguar GR1s, the squadron has been on its annual armament practice camp at Decimomannu. Although primarily a day tactical reconnaissance squadron, No 2 also has a limited attack capability and it is in this latter role that it has been exercising for three weeks on the Capo Frasca range in the north west of the island.

On each working day the squadron was allotted sufficient time on the range for six waves, each of four aircraft. The aircraft carried two CBLs (carrier bomb light stores) units, each with four 3kg practice bombs, and 90 rounds of ball ammunition for each of its two 30mm cannon. A typical 45-minute sortie would involve six minutes transit time from Decimomannu to the range, 10 minutes of level or 5° dive retard bombing, 10 minutes of 10° dive strafing, followed by a low-level navigation exercise or practice formation flying on the way back to base. A 10-minute period normally enabled eight passes to be made on the target.

The aim of the exercise was to improve the pilots' weaponry skills in the attack role and to re-qualify all pilots to Allied Command Europe (ACE) standards. Each pilot flew between 16 and 18 sorties. In order to ensure that maximum use was made of the allocated time, five pilots briefed for every sortie and five aircraft were started, so that if one were to go unserviceable at the last moment there was an immediate replacement available. The first wave was generally on the range at 09.00hrs and the last at 18.00hrs.

Some 130 engineers and ground crew supported the flying programme working in temperatures of between 35°C-40°C. Flying conditions were generally good although there were occasional visibility problems on the range itself. The chance was also taken to fly some long-range navigation sorties to both Cyprus and Gibraltar during the weekends. By the end of the detachment, all pilots had re-qualified to ACE standards and the overall scores achieved by the squadron in both bombing and strafing were assessed as excellent.



R. A. Nicholls

IT IS, as they say, an ill wind that blows no one any good, and the sale of exhibits from the Strathallan Collection at Auchterarder and the 'Wheels and Wings' Museum of Orlando, FL, together with the gradual retirement of the British Airways' Trident fleet, has enabled the Science Museum to add four important aircraft to its Air Transport Collection in just 13 months. As with the Museum's HP39 Gugnunc, Dakota, and Comet 4B, the recent additions are located not at South Kensington but at RNAY Wroughton, Wiltshire where the Museum has storage facilities for some of its larger transport items.

The Science Museum bought DH89A Dragon Rapide G-ALXT, c/n 6736, at the July 1981 Strathallan sale. Despite being built during the war as a DH89B Dominie, serial NF865, and having spent most of its civilian service in Ceylon (Sri Lanka) as CY-AAI and 4R-AAI, G-ALXT appears in the colours of Railway Air Services, a major operator of Rapides in the 1930s.

Next to arrive was G-AVYE, c/n 2139, an HS121 Trident 1E-140 which entered service with Stansted-based Channel Airways in 1968 and passed to Northeast Airlines Ltd, a BEA regional subsidiary, with the collapse of the original owner in 1972. 'Yankee Echo' was given to the Science Museum on its retirement from British Airways in late-1981.

The two most recent additions have come from Orlando, having been bought by the Science Museum and ferried to the UK by Aces High Ltd, of Fairoaks. The first of these, Lockheed 10A Electra c/n 1037, was built as a Model 10B with Wright R-975 engines in 1935 and was delivered to Eastern Airlines at Miami as NC14959 in September of that year. Two years later NC14959 was sold to Boston-Maine Airways, in whose ownership it was modified to Model 10A by replacing the original engines with Pratt & Whitney R-985s. In 1942 Boston-Maine Airways, which had by then been retitled Northeast Airlines, sold the aircraft to the US Civil Aeronautics Administration, and the following year it was re-registered NC243. In 1949 it passed to a company in Tulsa, Ok and adopted its present registration, N5171N. Thereafter it served with several executive, commuter airline, and private operators before entering 'Wheels

and Wings' in mid-1979. N5171N was sold to the Science Museum in June of this year and arrived at Wroughton on 21 June, having staged through Bangor (Maine), Sondre Stromfjord, Kulusuk, Reykjavik, Shannon, Cardiff, and Fairoaks.

The Electra was popular among European airlines in the late-1930s, and British Airways operated five examples from 1937 followed by a further two in 1938. The cabin accommodated 8-10 passengers, and that of N5171N has been re-furnished in the authentic style of the period, with seats and fittings of correct vintage.

The latest arrival is a larger American airliner of the 1930s, the Boeing 247D. The Museum's example, c/n 1722, was built as a Model 247 and delivered to National Air Transport, a United Airlines company, in July 1933; United had ordered 30 Boeing 247s at a price of \$50,000 each. Registered NC13340, the aircraft was modified to Model 247D in 1935 and remained in NAT/United ownership until sold to Pennsylvania-Central Airlines in December 1939. A change of registration to NC18 took place when the aircraft passed to the US Government Department of Commerce, and with its subsequent sale to a private owner in Miami for use as an executive transport it adopted its ultimate identity, N18E. In 1954 N18E was sold to Skytours Inc of Port Clinton, Ohio, and was used by two Skytours subsidiaries; the first Island Airlines, provided scheduled services between Port Clinton and a number of islands in Lake Erie, while the second, Travelair Taxi Inc, undertook charter and air-taxi work, operating out of Cleveland, Ohio. On retirement from service N18E was acquired for 'Wheels and Wings', where it remained until sold to the Science Museum in mid-1982. After being ferried across the North Atlantic to Fairoaks, N18E was flown into Wroughton on 3 August to join the ever-increasing Air Transport Collection.

With its sleek aerodynamic shape and such refinements as leading-edge de-icing, retractable undercarriage, and variable-pitch propellers, the Boeing 247 set new standards in civil air transport when first flown in 1933, and in terms of both engineering and passenger comfort it can fairly claim to have been the first of the 'modern' airliners.

Both the Electra and the 247D are the only examples of their type in Europe, and their importance in the development of civil

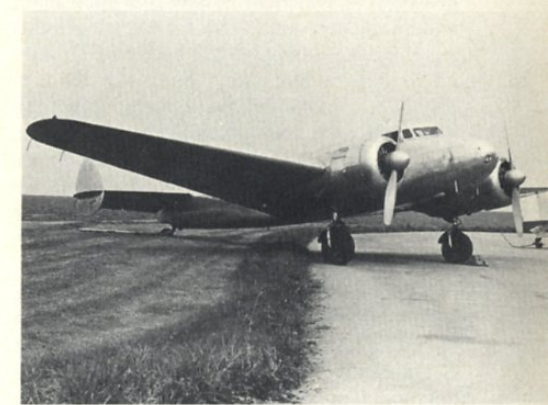
Above: Boeing 247, N18E, touches down on Wroughton's runway 04 on 3 August to join the Air Transport Collection of the Science Museum. All photos by the author

air transport makes them particularly welcome additions to the Collection. At the time of writing it is hoped that the Electra will be flown down to the RAE during 'Farnborough International '82', but practical considerations and sheer cost preclude any attempt to keep either aircraft flying once the current C of As have expired.

The Science Museum storage facility at Wroughton is NOT open to the public on a regular basis, but an annual Open Day is held on a Sunday in September when all the stored exhibits are on view.

Below: Rapide G-ALXT, built in 1943, wears the colours of Railway Air Services and carries the hull name *Star of Scotia*, originally applied to Rapide G-AEBX in RAS service from 1936-38.

Bottom: Lockheed 10A Electra, N5171N, which flew into Wroughton on 21 June, retains an overall plain metal finish.



CP Air DC-10 srs 30 taking off from Newcastle International Airport on the first stage of a new weekly service to Toronto. The route which takes passengers from Newcastle and Prestwick before making the trans-Atlantic crossing was inaugurated by CP Air in May 1982.

All photos by the author unless otherwise credited

British Isles' Airports: No 11 Newcastle Airport

J. R. Sinton

THE old North East of England comprised an industrial heartland largely distributed along the three main rivers, the Tyne, Wear and Tees with major centres of population Newcastle, Sunderland, and Middlesbrough. This was the background against which the City Council of Newcastle-upon-Tyne appointed, in 1929, a Special Committee to report on the advisability of an airport to serve the region. Eighteen locations were investigated before a site at Woolsington, about five miles northwest of the city was chosen. Due to protracted negotiations with government ministries, the airfield was not developed until 1934 when 107 acres out of a total of 345 acres were to be used. The official opening took place on Friday 26 July 1935 by the then Secretary of State for Air, Sir Philip Cunliffe-Lister CBE MP. A souvenir programme of the ceremony states that: 'An adequate supply of water for all purposes including that of extinguishing fire has been provided by a new four inch main and an underground cable for electrical lighting and other purposes has been laid'. It goes on to inform the guests that 'The requirements of the Air Ministry have been fully complied with and comprise a club house, hangar, workshops, offices, ambulance room, house for petrol and oil supply including specially designed arms and fittings for rapid distribution, garage for a fire tender, and a sewage disposal plant'.

The Newcastle upon Tyne Aero Club, which had been flying since its foundation in 1925 at the old RFC aerodrome at Cramlington, moved to Woolsington at this time as, under an agreement with the

Corporation they undertook the direction and management of all services at the new airport. This move was instrumental in creating a friendly rivalry between Newcastle Aero Club and Blackpool Aero Club at Squires Gate; Newcastle claiming to be the oldest aero club still in existence and Blackpool claiming to be the oldest aero club still at the original club aerodrome.

From the opening of the airport to the start of WW2 very little development took place. Throughout WW2 the airport was requisitioned by the RAF and used as a satellite airfield for nearby RAF Ouston, before it was handed back to the local authority in 1946. The airport continued much as before with no improvements to

show for its wartime service save for a few extra dilapidated huts and it was not until the early-1950s that any real development of passenger traffic started to take place.

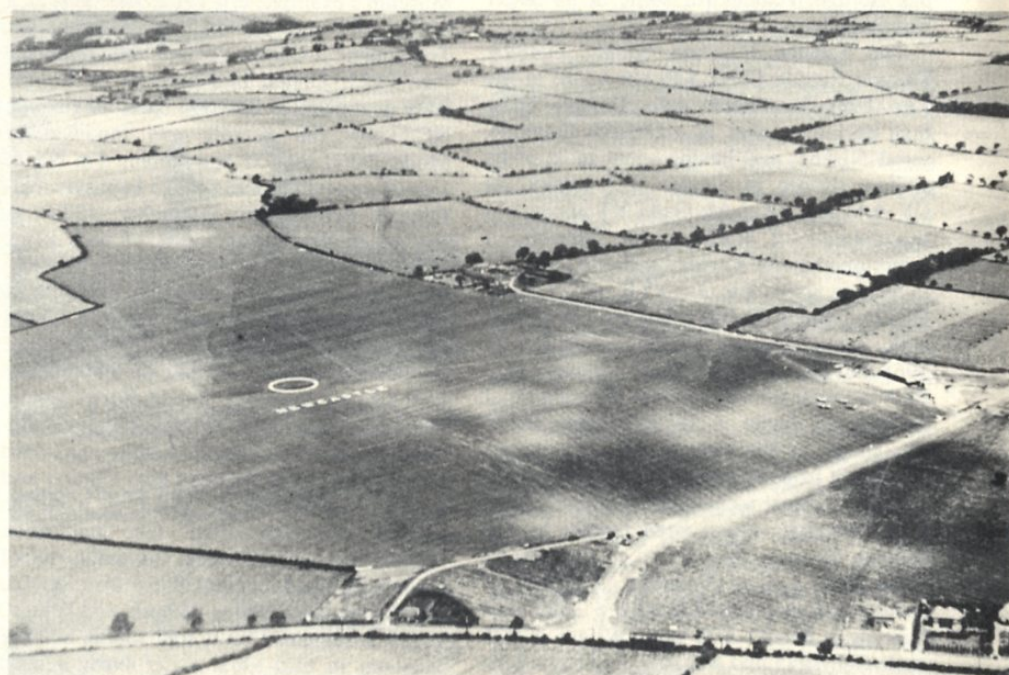
About 10 years later, with the rundown of many of the traditional industries, the North East began to look around for ways of attracting new business into the region and it became obvious that improvements were necessary at the airport as this, for many important visitors, was the first point of impression of the area. The collection of post-WW2 huts had grown somewhat and the present airport director, Mr J. H. Denyer OBE, told the author how a special system had to be organised for one aircraft carrying VIPs. It was parked in such a manner that the aircraft body was between the line of waiting cars and the huts so that on leaving the aircraft, the visitors could see nothing of the airport buildings before being whisked away for the site. Of course this procedure was again followed when they departed!

In 1963 the North East Regional Airport Committee was formed. This included representatives of the County Councils of Durham and Northumberland, the City and County of Newcastle-upon-Tyne and the County Boroughs of Gateshead and South Shields. The committee was later joined by the County Boroughs of Tynemouth and Sunderland, and a government grant was given towards the development of a new ter-

terminal as part of a policy of regional expansion. This committee now took over the responsibility for operation and development of the airport and Sir Frederick Snow and Partners were appointed as Consulting Engineers to advise on the development.

Their report provided for the staged development of a completely new terminal building and associated facilities. Construction started in late-1964 and the extended runway and new control building became operational in 1966. The new terminal was officially opened in early-1967 by the then Prime Minister, the Rt Hon (now Sir) Harold Wilson OBE. Since then a programme of staged development has taken place; the apron has been extended to take more, and larger, aircraft and cargo facilities and the control buildings have been further extended.

During the 1970s, there was a steady continued increase in both scheduled and charter passenger traffic. The rise in numbers (to $\frac{3}{4}$ million in 1976) coupled with the advent of large capacity wide-body aircraft and a significant increase in the ratio of international to domestic passengers — due to the rapid growth of IT holiday traffic — combined to cause severe congestion in the terminal at peak travelling periods. In addition to the demands due to this increase, security and search facilities needed to be provided as these were not envisaged in the initial design. Before any action could be taken to improve

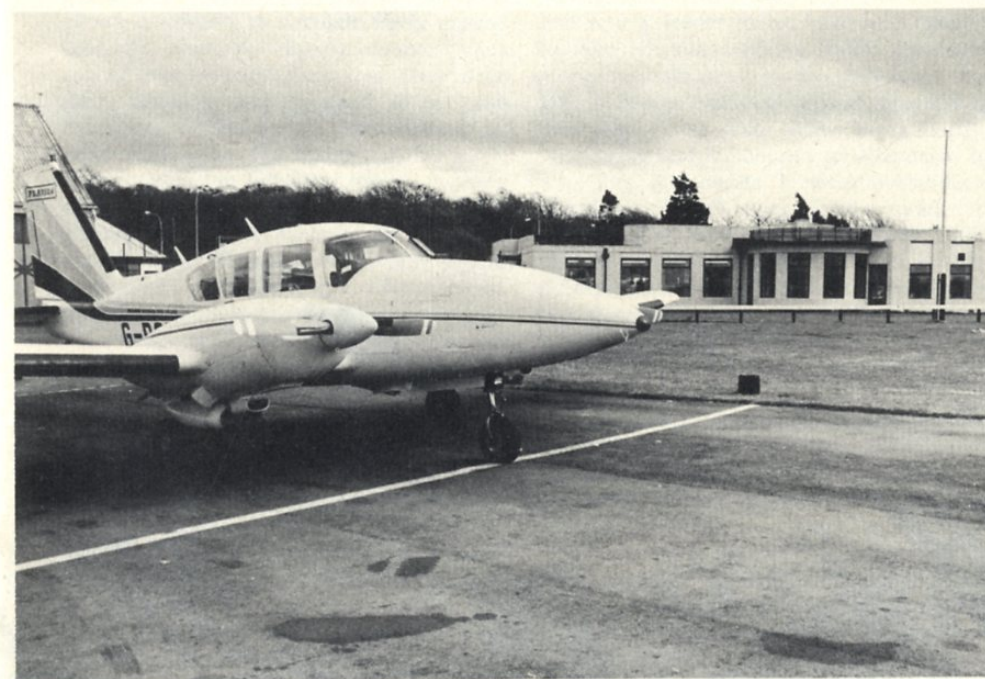


Above: The first aerial photograph of Newcastle Airport taken in 1935. From this field, with huts serving as terminal buildings and one hangar, evolved the present complex of today's airport.

Photo: Newcastle Airport archive

Right: A photograph of the control tower at Newcastle in the mid-1950s.

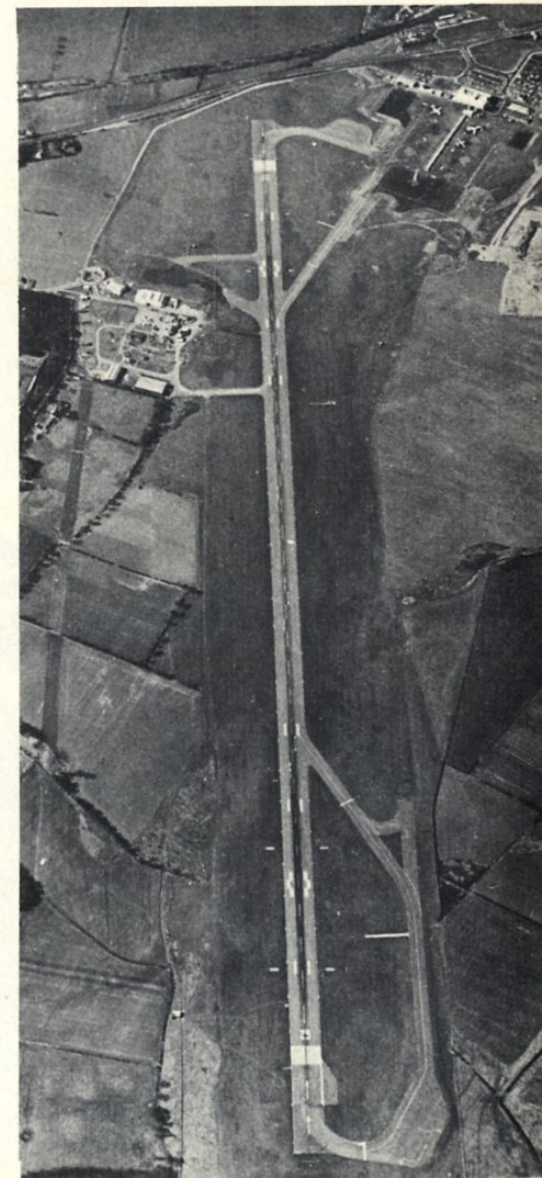
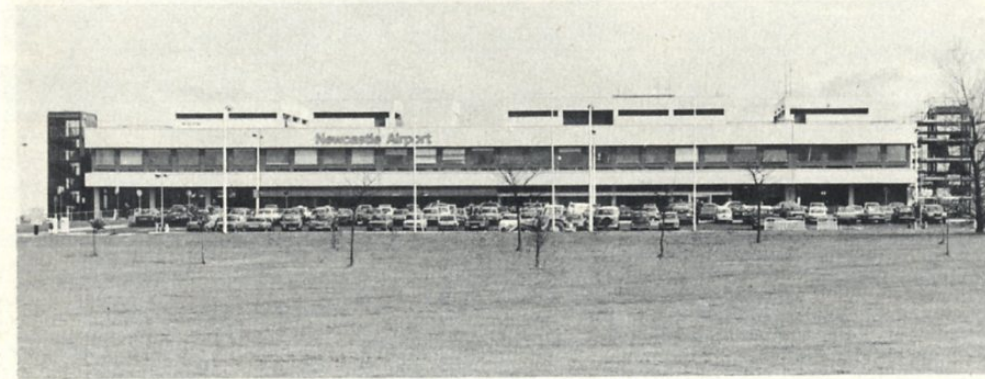
Photo: Newcastle Airport archive



Below: Piper PA 23 Aztec operated by a local business user at Newcastle. The building in the background is now the Newcastle Airport club house but was once the airport terminal building.

Below right: Latest aerial photograph of Newcastle Airport. When finance is available it is intended to join up the two holding loops to form a parallel taxiway. Photo: Newcastle Airport

Bottom: The present day frontage of Newcastle Airport. Since the original building was opened in 1967, it has been extended by over 25% in length.





Above: The new international departure lounge and duty free shop at the airport was built to handle the much larger numbers of international passengers now using this busy regional airport.

Above right: The new free-flow buffet area at Newcastle Airport.

Inset right: A regular freight service to Newcastle is operated by Air Atlantique, the Jersey-based airline being the only DC-3 operator to be seen frequently at the airport.

Below: A cross section of the many aircraft types using Newcastle Airport; an Air Atlantique DC-3 refuels parked near resident light aircraft, while a Dan-Air BAe One-Eleven takes-off en-route to London. Dan-Air is an airline that has close connections with Newcastle — in addition to charter flights it currently operates scheduled services to London (Gatwick) and to Scandinavia.



the situation, Newcastle airport, like all others in the country, had to wait for the 1978 White Paper on Airports Policy before initiating further development. The publication of the White Paper confirmed Newcastle as a regional international 'Hub' Airport. This enabled planned development to take place. The recommendation from the consultants was that the terminal building should be increased in floor area by 75% with large increases in international arrival and departure lounges. The access pier was to be re-built as a two level structure with gate-room lounges, thus making possible the future conversion to air bridge operation.

This re-building programme started in July 1980 and at the time of writing, Phases 1, 2, and 3 are open with Phase 4 work continuing across the summer and scheduled to be finished by November 1982. The problem with work of this nature is to keep the existing services operational while major alterations are in progress. The new international departure lounge and duty free shop are now open, as is a completely new free-flow buffet area. In conventional buffets and cafeteria systems as used until now, long queues tend to build up at cash points and customer movement is restricted to usually a single line around the food displays. Passengers requiring possibly just a single item have a long delay while they move the length of the entire queue. The first free-flow buffet at Newcastle allows customers to circulate freely around specially produced display counter units spaced over the entire floor area. They make their selection and proceed to a cash checkout, rather like a supermarket or department store. The success of this buffet since it opened in July 1981 has led to many visits from airport operators from all over Europe, and Airport Catering Services who operate the buffet are now planning similar type units at Heathrow, Birmingham, Manchester, Luton and Cardiff airports.

In order to further speed up passenger traffic in the terminal, the existing linear desk system, which again can create long queues at peak times, is being altered as part of Phase 4 into an island desk system which not only provides a better flow of passengers but gives the advantage of an improved baggage handling conveyor system. In order for this work to be performed over the busy holiday season it has been necessary for airline staff to improvise their handling services and amend them as various stages of the work are completed.

The first IT air package holidays started from Newcastle in the late-1940s and early-1950s. The old Air Charter Company in association with Airways Holidays of Stockton used DC-3 aircraft under the charter of the then new BKS Company to provide holidays in the Channel islands and the Isle-of-Man. Since these early beginnings the growth in package holidays has been contributory to the vast increase in air traffic not only at Newcastle but throughout the world.

As previously described, this increase has strongly influenced the design of the extended terminal building, the projection of the ratio of international to domestic passengers being 60:40 for the year 1990. Despite the current recession, package holidays have continued to expand, and in this respect the North East has not been affected as much as had been expected. Nearly 40 destinations are served direct from Newcastle by 17 tour operators, and Newcastle in 1981-82 has become a major regional tour airport being second only to Luton in this field.

Scheduled services have also expanded and as well as the to be expected daily flights to Heathrow and Gatwick operated by British Airways and Dan-Air, there are daily services to most parts of the UK. International scheduled routes include a daily British Caledonian flight to Amsterdam, Newcastle being an intermediate stop from and to Glasgow. Dan-Air provides a six day service to Norway using BAe One-Elevens and several feeder routes have been opened to take advantage of the traffic generated along the East coast by North Sea oil. Air UK, based at Norwich Airport, operates a 'bus stop' route from Norwich via Leeds, Newcastle, and Edinburgh to Aberdeen. It also flies a separate Newcastle-Aberdeen direct service all using F27 aircraft. A newcomer to Newcastle is a Twin Otter operated by Metropolitan Airways, a subsidiary of Alderney Air Ferries. This aircraft is operated during the week for Dan-Air on a new inter city service connecting Newcastle with Manchester, Birmingham, Cardiff, and Bournemouth.

With only 1% by weight of UK exports moving by air, there is obviously much scope for further growth in the air freight industry. Newcastle Airport serves a catchment area of over 1½ million people and provides air freight export facilities for a wide range of industries. Due to the changing nature of industry in the North East, many companies in the area have only been established within the last two decades attracted to the region

by development grants and tax concessions. Many of these firms manufacture types of goods ideally suited to air transport. In the early years of air freight at Newcastle, small consignments were carried in the baggage holds of DC-3 or Elizabethan aircraft, but the size and weight limitations of this type of aircraft meant that larger items needed to be road or rail hauled to Heathrow for onward despatch. Some of these constraints were lifted when Tridents and One-Elevens were introduced on the London route but even this increased capacity did not always satisfy the needs of the expanding export markets. To help solve the problem of under capacity and to make the most efficient use of existing freight services, British Airways started road services to Heathrow, Prestwick, and Manchester airports. Although the Prestwick service has been withdrawn, the alternative services to Manchester and London now carry a significant proportion of air freight from the region. In addition, the direct continental flights to Norway, Holland and Ireland are re-capturing freight on these routes. The current recession, coming as it did at a time when the region was suffering from longer term problems, has set back some hopes for freight expansion but the latest available figures show that freight throughput at Newcastle has not been affected as much as had been feared.

The main runway 07/25 is 7,651ft (2,332m) long and due to the proximity of two public roads is unlikely to be lengthened. However the need for longer runways is diminishing with the new generation of wide-body fan-jet engined aircraft. In practice the only limitation imposed by restricted runway length is one of fuel uplift. This is not always a disadvantage as CP Air has proved with its new weekly summer flights to Toronto using DC-10s. The service is designed to serve a catchment area of North East England and Southern Scotland with seat allocations being shared between the two areas. The aircraft leaves Newcastle for a short sector to Prestwick where it takes passengers from Scotland and further fuel before making the Atlantic crossing. 1982 is the first year that the service has been run by CP Air in its own right, previous services having been staged on a charter basis.

As well as needing less runway, the new wide-body aircraft are significantly quieter in operation and with noise certification requirements being phased in by most national authorities it is expected that by 1986 no non-certificated aircraft will be in operation at Newcastle. This is especially welcome due to large housing developments near each end of the runway. British Airways has already indicated its intention to use Boeing 757s on the Heathrow route in 1983-4. In order to accommodate the expected increase in aircraft numbers, the apron area is to be further extended, the con-



Left: A newcomer to Newcastle Airport, Twin Otter G-BHFD of Metropolitan Airways. This aircraft operates a City-link service from Newcastle during the week.

tract for this work being placed in May 1982 and as soon as finance is available the remaining bottleneck at peak times due to the single runway will be removed by the construction of a parallel taxiway which will join the east and west holding loops.

Newcastle airport is protected by its own Special Rules Zone within the Northern Joint Radar Advisory Service area. This zone came into operation with the entering into service of a new Cossor 10cm surveillance radar which was in addition to the existing 3cm Approach Radar. Newcastle is now part of the Lower Airspace Radar Advisory Service system with coverage extending to a radius of 40 miles. This is especially useful as there is intense military activity 35 miles to the south in the Vale of York training area and much low level traffic using the Otterburn and Spadeadam ranges, both of which are within 40 miles of the airport. Co-ordination of this traffic and area civil movements is performed by direct telephone line to Border Radar and Leeming Air Traffic Control. As well as military overflights there are many military movements at Newcastle. USAF and Belgian air force aircraft use the airport in support of army exercises at the Otterburn training area and in addition training aircraft from the Vale of York visit to familiarise students with civil as against military procedures. The airport is also conveniently situated as an emergency diversion airfield and recent visitors in this

category include a Tornado from the TWCU at Honington with hydraulic failure, an F-15 Eagle with engine problems, and several A-10 Thunderbolt IIs suffering from bird strikes.

Recent technical additions include VOR/DME, the provision of an additional instrument landing system serving Runway 25 and secondary radar which has been installed and is now in service. The main runway was completely re-surfaced in 1981 and, following the example of Manchester International airport, the contractors were only allowed overnight access with the runway to be operational the next day. The work was completed in a two month period without disruption to the normal airport traffic.

The original site of the terminal is now a maintenance area although with more complex aircraft and centralised maintenance facilities there is not now the volume of work that once took place. The area in consequence has been developed as an overspill area for some cargo agents and ancillary services. The airport runs its own fire service and they have a training site here away from the operational side of the airport. The original terminal building is now a club house for the Newcastle-upon-Tyne Aero Club and several small business aviation facilities have made their headquarters in the adjacent hangars. Gill Aviation is one of these having been at Newcastle since 1966 when it started a flying training service for

the Aero Club. This training ceased in 1969 when the company concentrated on twin-engined charter work, and some aircraft management for North East companies. However the air charter business has reduced with the expansion of the commercial airlines' route networks and service and management work is now the company's main business.

Newcastle airport has shown how it is possible to grow in the area despite some of the major economic difficulties which face both the country and the region. With vigorous, some would say aggressive, support from the North East Regional Airport Committee, and the airport Director Mr J. H. Denyer OBE — himself the holder of a Commercial Pilots Licence and a past winner (in 1956 and 1958) of the King's Cup Trophy — Newcastle has provided a modern and attractive gateway to the North East. The long term aim is, in the words of Mr Denyer, 'to have growth in every area of operation, not only the tour side, and to see the route network expand to cover every major city in Europe'. The airport authorities are proud that since 1978 it has not been a burden on the ratepayers in the area, and all surpluses have been ploughed back to improve airport facilities. With the work in progress and plans envisaged, the airport can look to the 1980s and 1990s with confidence that it is providing the aviation services required by the North East of England.

Newcastle Airport Statistics 1 April 1974-31 March 1982

	Passengers	Air Transport Movements	Expenditure (£)	Income (£)	Deficit (£)	Surplus (£)
1974/75	672,567	11,916	1,334,113	832,189	501,924	—
1975/76	701,634	12,595	1,750,574	1,197,067	553,507	—
1976/77	755,984	14,022	2,027,481	1,764,364	263,117	—
1977/78	748,251	14,247	2,403,512	2,219,881	183,631	—
1978/79	889,984	16,152	3,172,271	3,172,271	—	—
1979/80	993,595	17,121	3,540,549	4,093,185	—	552,636
1980/81	1,021,658	17,591	4,764,766	5,142,706	—	377,940
1981/82	1,087,693	17,069	Estimate 5,104,800	5,371,300	—	266,500

Newcastle Airport Freight Statistics

Year	Total freight handled
1957	59 Short Tons
1960	600 Short Tons
1965	1,734 Short Tons
1970	3,726 Short Tons
1975	3,441 Metric Tonnes
1976	3,818 Metric Tonnes
1977	4,694 Metric Tonnes
1978	4,975 Metric Tonnes
1979	5,747 Metric Tonnes
1980	5,200* Metric Tonnes
1981	4,950* Metric Tonnes

*Provisional figures

The growth of the inclusive tour trade has been a major factor in the expansion of Newcastle Airport. Britannia Airways has a long association with the North East and the picture shows one of its fleet of Boeing 737 aircraft landing after a trip from Majorca.

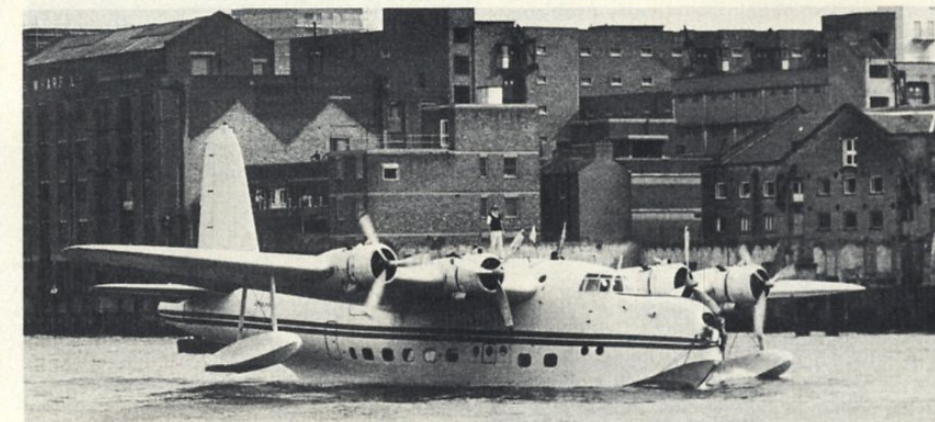


A SUNDERLAND IN LONDON

Photo report by Francois Prins

EDWARD Hulton's Sunderland was built by Short Brothers in Belfast in 1944 as a Mark V variant of the famous flying-boat. Powered by four 1,200hp Pratt & Whitney Twin Wasp engines, the Mk V gave a much improved performance over the previous Bristol Pegasus-powered Sunderlands. Bearing the RAF serial ML814, Excalibur VIII entered service with No 201 Squadron, later serving with Nos 330 and 442 Squadrons. In 1953, after some time in storage at Wig Bay (Stranraer), ML814 was sold, along with 15 other Sunderlands, to the Royal New Zealand AF (RNZAF). After some re-fitting, ML814 emerged as NZ4108 of the RNZAF and joined No 5 (MR) Squadron in July 1953, operating out of Hobsonville, Auckland and Lauthala Bay, Fiji. During the following 10 years, NZ4108 gave excellent service and flew many thousands of miles. About this time the RNZAF was phasing out the Sunderlands, so when Ansett Flying-Boat Services lost one of its Sandringham aircraft in a storm, it turned to the RNZAF for a replacement. After some persuasion the New Zealand government agreed to sell NZ4108 to Ansett Flying-Boat Services. In December 1963 the aircraft was ferried to Hobsonville to be converted into a Sandringham type aircraft; as Excalibur was not converted by Short Brothers into a Sandringham, it remains a Sunderland.

On 26 October 1964, NZ4108 entered the civil aviation world as VH-BRF to fly the regular 400 mile route between Rose Bay, in Sydney Harbour and Lord Howe Island.

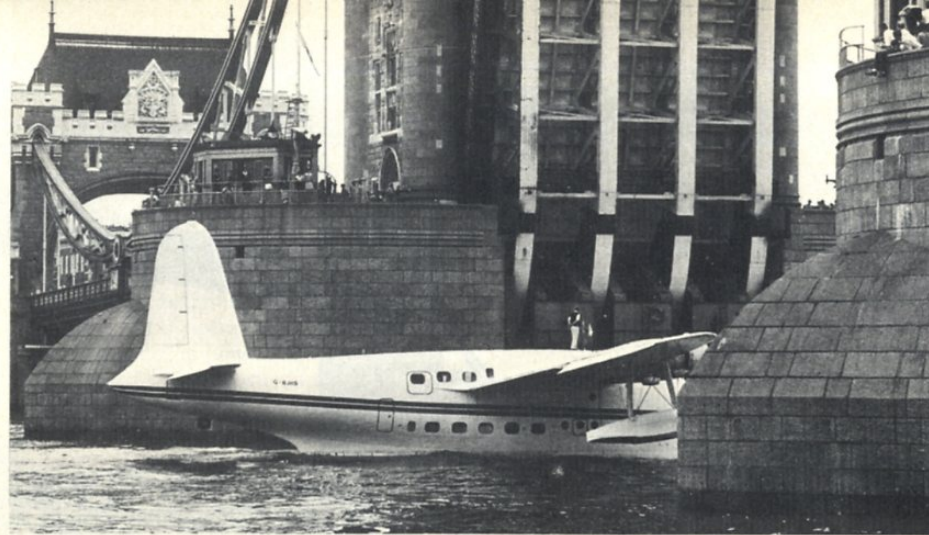


Bearing the name 'Islander', the Sunderland flew with Ansett until late-1974 when she and a sister aircraft were sold to Antilles Air Boats in the US Virgin Islands. The two Short aircraft were ferried to St Thomas in the US Virgin Islands and then moved to St Juan, Puerto Rico for a complete overhaul. However only Sandringham N158C entered service with Antilles Air Boats, this aircraft was flown to Calshot on two occasions by Capt Charles Blair, the president of the airline, to give joy rides to willing customers. Meanwhile 'Islander' bearing the US registration N158J deteriorated at St Juan. Blair was killed in an accident in one of the smaller Grumman aircraft owned by Antilles and the two large flying-boats were left to the elements. Due largely to the efforts of Capt Ron Gillies, he had known of both aircraft for many years, they were rescued and sold to British buyers. 'Southern Cross' was purchased by Peter Bolton and a group of friends and 'Islander' was bought by Edward

Top: Excalibur VIII on the Thames — Edward Hulton's Sunderland moored in front of the familiar landmarks of the Tower of London and Tower Bridge.

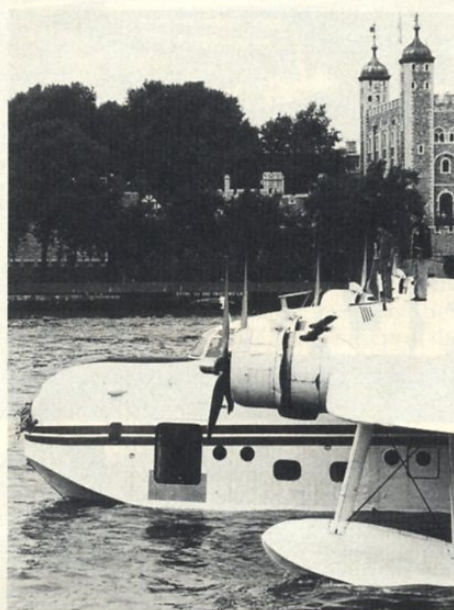
Above: Sunderland G-BJHS taxiing up river on the power of its two outboard Pratt & Whitney Twin Wasp engines. The aircraft alighted on the River Thames near St Katherine's Docks on 6 August 1982.

Hulton. Both aircraft were made airworthy by local labour and flown to Britain, 'Southern Cross' arrived first at Calshot and was followed by 'Islander' now bearing the new name 'Juliet' on 21 May 1981. For three glorious days there were two Sunderland/Sandringham flying-boats at Calshot together. 'Juliet' departed on 24 May for Marseilles, where Edward Hulton had decided to restore the aircraft fully. The work that had been carried out on the two aircraft was far from good and there was a great deal to be done to make them fully air-



worthy and safe. Mr Bolton spent a large amount of money on his aircraft but felt he could no longer afford to maintain it and eventually sold it to the Science Museum for £85,000. 'Southern Cross' is now housed at Lee-on-Solent, her future is assured, but a permanent home has yet to be sought, the aircraft will probably end up at the Science Museum's collection at Wroughton. A small group of enthusiasts are looking after her and keeping the aircraft in reasonable condition.

Meanwhile, in Marseilles, Mr Hulton and his team carried on working on 'Juliet' to make her fully serviceable. To date he has spent about £1 million on buying and restoring the aircraft. There were many problems getting the aircraft back into the air, it was hoped that the Sunderland would make an appearance at the Calshot celebrations this year, but is was not ready in time. On 6 August 1982, bearing the new name 'Excalibur VIII' and on the British register as



G-BJHS, the Sunderland took off from Marseilles en-route for Britain, piloted once again by Capt Ron Gillies. Shortly after 16.00hrs, Excalibur was seen over the City of London, accompanied by an RAF Sea King helicopter, the Sunderland made four passes over the Tower of London and just after 16.15hrs she alighted on the River Thames near St Katherine's Docks. Ron Gillies cut the two inboard engines and taxied towards the open Tower Bridge, as he did so, RAF Nimrod XV227 made two low passes over the Tower, as a salute to this old aircraft. Having reached the moorings, just aft of HMS *Belfast* and opposite the Tower of London, Capt Gillies cut the engines and the Sunderland was made fast.

Edward Hulton hopes to keep Excalibur flying and will, possibly, be offering the aircraft for charter work and appearances at air shows. We may yet see this graceful aircraft flying regularly in this country during the coming years.

Above left: The only Sunderland currently airworthy, G-BJHS, passes through Tower Bridge to its mooring . . .

Left: . . . opposite the Tower of London.

Below: The graceful lines of the Sunderland are evident in this view of Excalibur VIII seen aft of HMS *Belfast*.

Right: Tower Bridge provides the impressive backdrop to Short Sunderland Excalibur VIII, G-BJHS.





ASCENSION ISLAND: *staging post to the Falklands/Part 1*

Allan Burney

THE roar of Rolls-Royce jets echoed around the airfield as the Victor ran-up its engines, the rearward blast sending up a choking cloud of orange-coloured volcanic dust. Squatting heavily on its undercarriage, the fuel-laden aircraft languished in the mid-morning sun, its jet efflux merging with the heat haze reflecting off the apron at Wideawake Airfield, Ascension Island. Steadily the Victor taxied forward, trailing its two companions — a mix of Nos 55 and 57 Squadrons — towards the threshold of the 10,000ft runway that bisects the south western tip of the island. Flanking the long strip of concrete are cones of volcanic ash, atop which sit radar dishes and aerials of tracking stations. In turn each RAF tanker began its take-off run and was obscured momentarily by the pronounced hump of the runway, before re-appearing in a steady climb-out, heading south in the direction of the Falklands.

Ahead of the aircrews lay sorties of up to 10½hr endurance (if the aircraft is in the 'long slot'), during which the tankers will replenish, by a series of staged refuellings, a lone Hercules transport droning its way across 3,500 miles of the South Atlantic to Stanley airfield. The Hercules, a specially modified aircraft for long-range missions, departed Ascension in the darkness of early morning and is one of two such daily flights ferrying supplies and personnel to the UK dependency. A daunting round-trip of 28 hours plus faces the Hercules crews if the runway at Stanley is 'out' — which is often the case at this time of year — and with no nearer diversion politically acceptable, the transport has to retrace its route back to Ascension.

The Falklands conflict may now be over (bar the shouting of the politicians) but the

support of an airbridge continues and to maintain this vital link, Ascension Island remains in the fore of operations, albeit in a scaled-down programme since the cessation of hostilities.

Ascension Island

Barely seven miles wide, Ascension is a minute speck in the vastness of the South Atlantic, located between the Equator and the Tropic of Capricorn and lying at a longitude of 14.24°W. There is no escaping the island's metamorphic origins: its landscape is punctuated with volcanic cones spewing long-since solidified streams of lava. The terrain is largely barren of vegetation, there is no natural water and little shelter from the hot summer sun. However, a contrast is provided in the form of Green Mountain, the highest peak on the island at 2,817ft, where a steady 'winter' precipitation has given rise to lush vegetation and trees.

Ascension is governed by the British dependency of St Helena but there is no indigenous population, save for the numerous land crabs and birds — one species of which, the Wideawake, gave its name to the airfield! The island's normal population of around 800 comprises solely of personnel working on contract and of these approximately half are St Helenans (or 'Saints' as they are known). Establishments on the island reflect its key location in the middle of the South Atlantic and comprise a BBC Relay Station, Cable and Wireless and a US Satellite and missile tracking station.

Wideawake

This year marks the 40th anniversary of the airfield at Ascension, the honour of being the first aircraft to land at Wideawake going to a Fairey Swordfish on 15 June 1942. Owned by the USAF, the airfield was originally constructed as a staging post for its warplanes flying between Brazil and Africa during

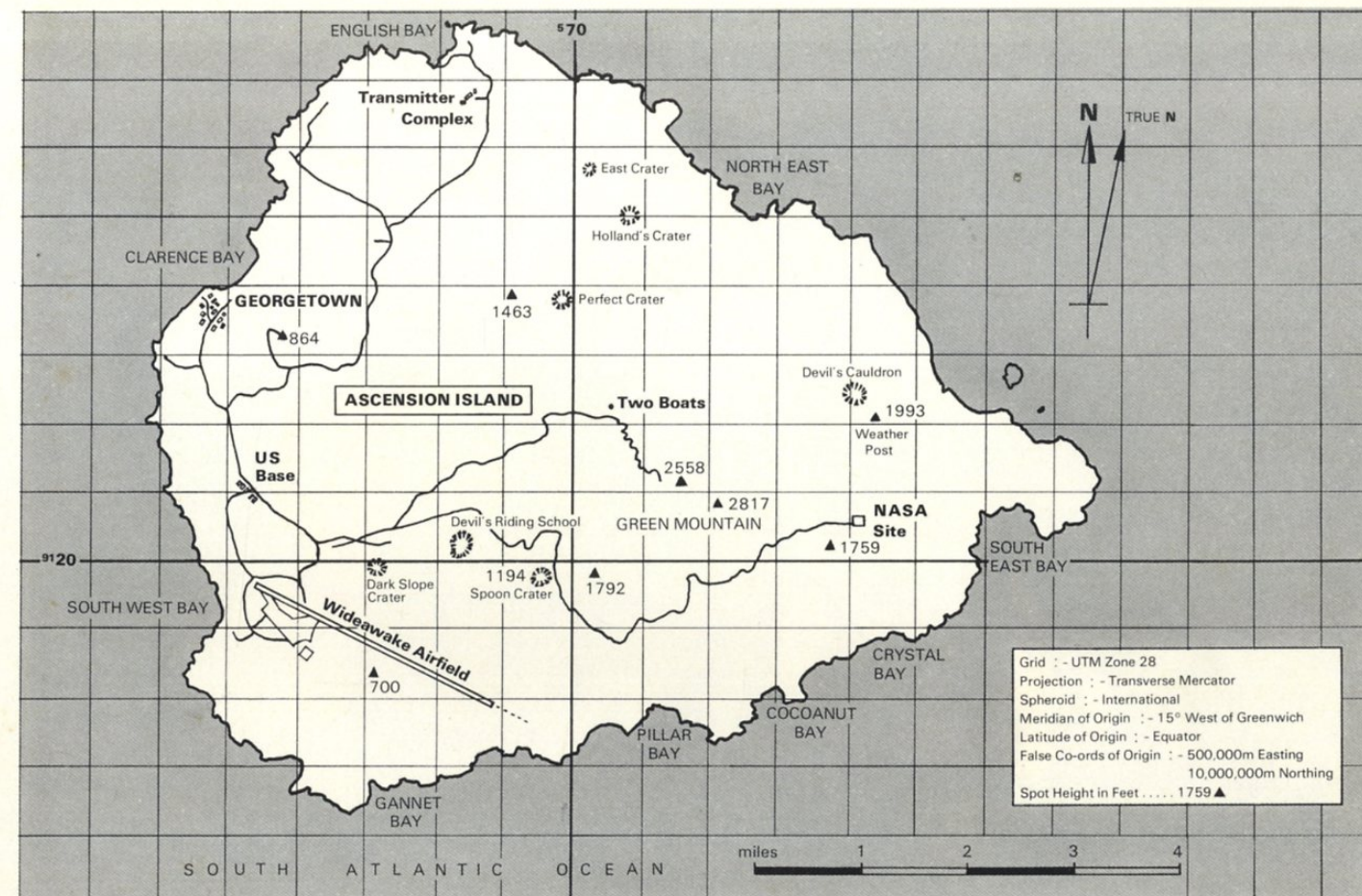


Top: RAF Victors of Nos 55 (foreground) and 57 Squadrons on the apron at Wideawake Airfield, Ascension Island.

All photos Allan Burney unless otherwise credited

Above: The key to the importance of Ascension Island during the Falklands campaign — its 10,000ft runway. This view, looking north eastwards across the southern tip of the island, shows the steep rising mountains and lack of a taxiway.

Right: Framed by the wing of a companion, an RAF Hercules taxis-in at the conclusion of another 'marathon' sortie from Wideawake.



WW2. Post-war it was developed further to accommodate large transports supporting the US tracking stations. Today there are regular visits by Military Airlift Command C-141 Starlifters (one was present during the author's visit), and occasionally a C-5A Galaxy 'drops in'. Although it is American controlled, Britain retains a right to use the airfield following a 1962 agreement whereby the US base commander requires a day's notification of the arrival of a UK aircraft. Fortunately during the Falklands crisis this ruling was waived.

Wideawake comprises a single 10,000ft runway, slotted across the island at an angle of 149°. The prevailing wind is a consistent 150° and this, combined with the normally reliable weather, makes it extremely rare for the airfield to be closed for climatic reasons. Flying into Ascension is not easy. Squalls

can often be experienced on the final approach over the sea and the mountains rising sharply either side of the runway leave little margin for error. There is no taxiway or holding loop, only a large concrete apron at the west end of the runway.

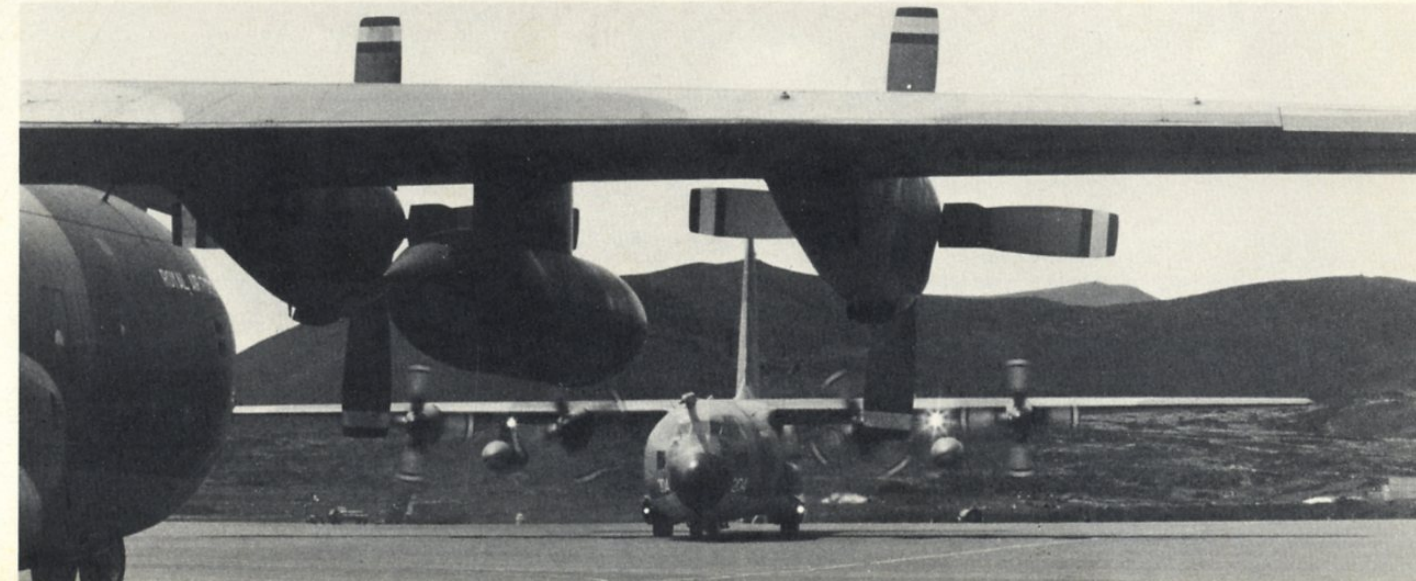
The average number of movements (a take-off or landing) at Wideawake is 55/month, but during the Falklands crisis the figure rose to a massive peak of 800/day. The airfield was not designed to take this capacity and obviously a certain amount of congestion on the parking apron was a result: Vulcans, Victors, Nimrods and Hercules are all very big machines!

Now the operation is being wound down to more manageable proportions as was witnessed in mid-August by the small number of aircraft scattered around the hardstanding. Detachments of Victors and Hercules

remain for the Falklands airbridge and other types present were; a sole Nimrod MR2, Chinook, RAF Rescue Sea King, two RN Wessex and a No 10 Squadron VC10 being prepared for its return to RAF Brize Norton, over eight hours flying time away to the north. Its departure was eagerly awaited by home-bound troops amassed in the makeshift hangar that serves as an air terminal. They have just stepped off a Hercules after an ear-battering 13hr flight and are the last personnel airlifted out of Stanley prior to the airport's temporary closure during the lengthening of the runway from 4,100-6,000ft.

The build-up

The events of April in the far south of the Atlantic brought a tremendous influx of aircraft, supplies and personnel to Ascension.

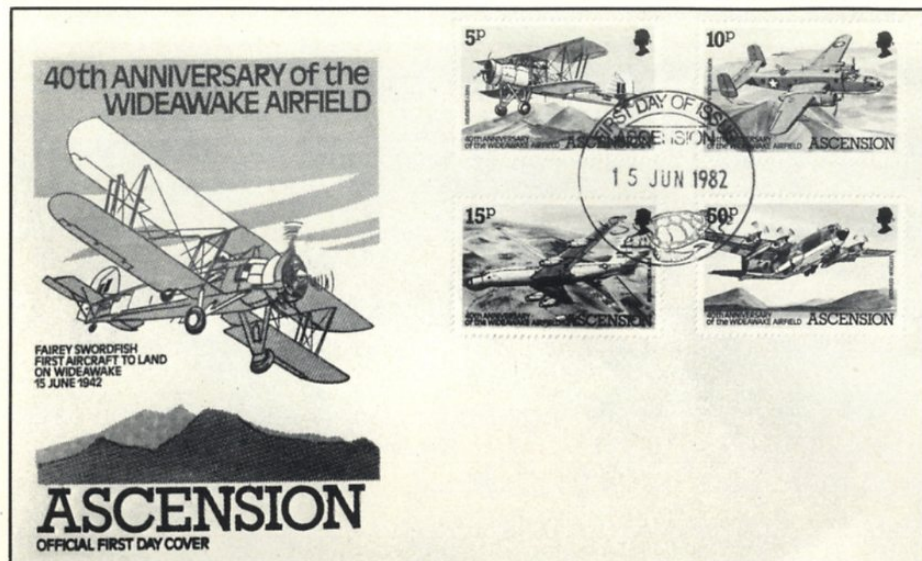




Above: The crescent-shape wing of the Victor is highlighted in this view of two No 55 Squadron aircraft (XL188 [left] and XM715 [right]) on the apron at Wideawake Airfield, Ascension.

Below: The 2,817ft peak of the aptly named Green Mountain provides an impressive backdrop for RAF Victor K2, XH671, of No 55 Squadron. This view is not entirely representative of the terrain of Ascension, as Green Mountain is the only part of the island where vegetation flourishes; the rest of the landscape largely comprises barren volcanic mounds, ash piles and lava flows.





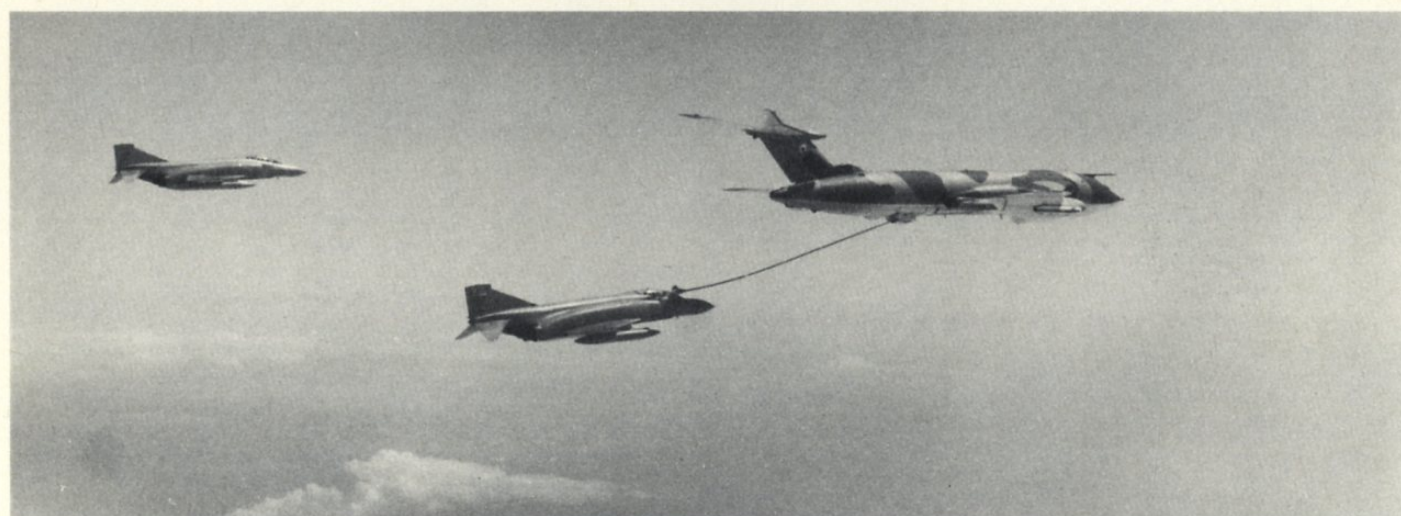
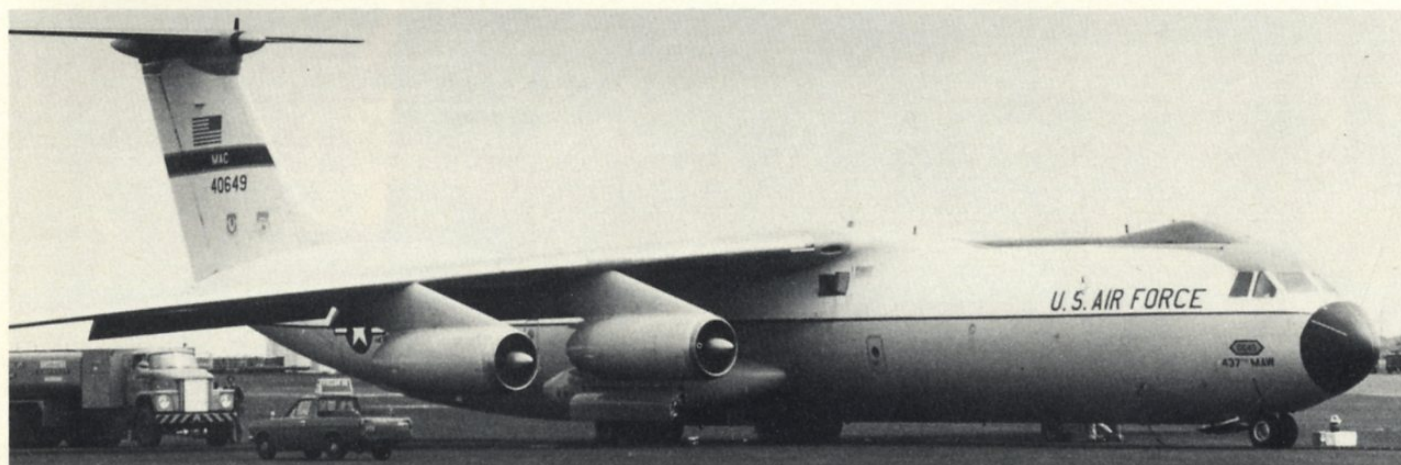
Left: A commemorative first day postal cover issued on 15 June 1982 to celebrate the 40th anniversary of Wideawake Airfield.

Below: USAF C-141 Starlifter, 64-0649, of the 437th MAW at Ascension on 13 August 1982. C-141s are regular visitors bringing in supplies and equipment to the US personnel stationed on the island.

Below centre: The rotary-winged element still based at Ascension comprises two RN Wessex and an RAF Sea King.

Bottom: A photograph taken at the time of the Falklands conflict with a No 55 Squadron Victor providing sustenance for an F-4 Phantom while another of the fighters looks on. A detachment of Phantoms was based at Ascension during the crisis to provide an air defence capability against a possible attack.

Photo: Flt Lt John Wyham



Below: Seen through the observation periscope of a Victor tanker, an RAF Nimrod MR2 takes on fuel during a mission profile flown from Ascension at the time of the Falklands crisis. Nimrods provided essential surveillance cover for elements of the Task Force and also carried out maritime reconnaissance around Ascension. Photo: Flt Lt John Wyham



Above: Green Mountain provides an impressive backdrop to Nimrod MR2, XV234, at Wideawake in mid-August.

Right: RAF Hercules, XV204, undergoing maintenance on the apron at Wideawake. This example has in fact been converted into a tanker, as can be witnessed by the drogue trailing out the back.

The island's location permitted shipping time to be saved by flying servicemen and freight there for loading on to ships bound for the Falklands. On and off loading was complicated by there being no harbour at Ascension and lighters operated a shuttle service between the ships and the pierhead at Georgetown. However, this was often hampered by unpredictable swells coming in off the sea with peaks rising to 20-40ft high! Therefore, helicopter 'ops' proved fundamental to the transfer of goods, the Chinook's 10-ton capacity proving particularly invaluable.

Practically overnight the islands' population was increased by some 1,400 UK servicemen and this in itself brought about problems of accommodation. Georgetown and Two Boats, the only two towns on the island, absorbed a proportion of these but a large number initially had to go under canvas. Extra accommodation arose 'out of the ashes' in the form of Concertina City. Rows of fold-out huts that provided some semblance of air-conditioned comfort for the aircrews between their long sorties.

By the end of the operation some 5,600 personnel and 7,500 short tons of stores had

been flown to Ascension using over 17,000 flying hours of RAF C-130s and VC10s.

Victors arrive

The first aircraft to deploy in force to Ascension were RAF Victors which arrived in mid-April. They were immediately employed in a role not normally associated with the type, that of maritime radar reconnaissance. A number of the tankers were specially adapted for the task which included 'tweaking' up its H2S radar to improve its performance and installing INS; this was later replaced by Omega long-range radio navigation equipment.

Six Victor MR missions were flown down to South Georgia and along the coast of South America, to ascertain the positioning of the Argentinian fleet and to confirm a clear passage south for the Task Force. With the arrival at Ascension of Vulcans and Nimrods equipped for in-flight refuelling, the Victors reverted back to their normal role.

At an early stage of the conflict it was recognised that Ascension itself represented an attractive target for the Argentinians, a potential threat being a commando raid flown in by Hercules. Several measures were taken to counter the danger. An air defence radar was set up on the summit of Green Mountain (airlifted into position by a Chinook), an RAF Regiment force equipped with Rapier was stationed there as were three RAF F-4 Phantoms. All shipping was also briefed to alert Ascension of any sightings of unidentified aircraft or ships and Nimrods flew continuous patrols around a 400-mile radius of the island. In the event the only foreign 'intruders' were the inevitable Russian 'Bear' and intelligence-gathering aircraft.

Nimrods provided essential surveillance cover for vital elements of the Task Force and the in-flight refuelling capability, fitted in only three weeks, enabled the RAF to extend the range and time on task of the aircraft; its endurance on patrols was more than doubled and some of the 150 or so sorties lasted over 19 hours. A self-defence capability was given to the Nimrods with the fitment of air-to-air AIM-9L Sidewinder missiles and the aircraft was also adapted to carry the anti-ship Harpoon missile.

To be concluded





Above left: The last serviceable SP-2H Neptune to fly with the RNeth Navy was '204'. The type was officially retired from the service's inventory on 21 July 1982 when '204' set out to greet the MLD's first Orions off the Dutch coast and was joined by the lead P-3C, '300' and Atlantic '258' for a formation fly-in to Valkenburg followed by an individual last low pass. Photo: Kon. Marine/AVD-Foto/Ops

Left: Destined for the Museum Kamp van Zeist Soesterberg, SP-2H Neptune, code-number '201', left Hato, Curacao on 5 November 1981 and, via Puerto Rico, Greenwood, the Azores and Lisbon, flew into Soesterberg AB on 9 November. As it approached the base it was 'intercepted' by two USAF F-15s from Soesterburg, making possible this unusual formation photograph.

Photo: Kon. Luchtmacht/Fotodienst Soesterberg

Above: The very last formation flight of Neptunes in service with the Marine Luchtvaartdienst (MLD — RNeth Navy): SP-2H serial '204' was seen in company with '210' on 9 June 1982. Photo: Kon. Marine/AVD-Foto/Ops

Ben Ullings/Aviation Photos International takes a look at nearly 20 years of Neptune service with the RNeth Navy and recalls the events leading up to the type's retirement in July 1982 to make way for the Lockheed P-3C Update II Orion

DUTCH maritime strength has long been essential to uphold the nation's leading position in the Merchant Service and to protect its overseas territories. Today the country's economy is still dependent on the seas and in particular the accessibility of the Amsterdam and Rotterdam ports is a vital issue for the Netherlands and its vast hinterland. Dutch naval tasks within NATO reflect these maritime interests and are focused on maintaining a total of four escort groups that operate South of the Channel, in the North Sea and the Eastern Atlantic.

Long range air support is a key factor in this operation and this was strengthened in July 1982, when the first four Lockheed P-3C Update II Orions (out of a total of 10 ordered) arrived at the Valkenburg Naval Air Base from NAS Jacksonville in Florida, where the first Dutch crews have been trained. Their arrival marked the end of nearly 20 years of service by the Lockheed SP-2H Neptune, which itself succeeded the earlier P2V-5 version first flown in Dutch markings in 1953.

A taste of ASW

Twelve P2V-5 Neptunes were received by the Marine Luchtvaartdienst (MLD — Royal Netherlands Naval Air Service) from Lockheed between December 1953 and February 1954 under the Mutual Defence Assistance Programme (MDAP) and joined No 320 Squadron at Valkenburg. They replaced Lockheed-Vega PV-2 Harpoon Maritime Patrol aircraft flown by the unit during the preceding two years and major advantages of the Neptune included the fitment of APS-20 Search Radar, housed in the distinctive ventral radome forward of the weapons' bay, and the Electronic Support Measures (ESM) equipment that could detect and identify radar and radio emissions. In addition, the Neptune also carried a 'Julie' system for the receipt of signals from passive sonobuoys.

In the early variants the only means to establish the exact location of a submerged submarine was by dropping a circular pattern of four sonobuoys within an estimated radius of 2km maximum and a fifth one in the centre — each sonobuoy preferably in a 90° position to the next one. By monitoring the transmissions from each buoy individually the position of the submarine could be determined.

When the submarine was eventually located, a drop of smoke markers launched backwards via a 'retro-tube' preceded an attack with depth charges. However, sonobuoy impact with the sea surface was often enough to make them malfunction and this was especially the case with those buoys

that had been recovered after previous drops and overhauled for re-use. When this happened the buoy-pattern had to be repeated, providing the submarine with ample opportunity to run out of the covered area. Several occasions have been recorded where, during an exercise, a participating submarine had to be asked to return to its previous position so that the detection procedure could be completed!

Another innovation at that time was the Magnetic Anomaly Detection (MAD) system capable of registering changes in the Earth's magnetic field as occurs in the presence of a submarine. The MAD receiver was housed in the 17ft extended 'stinger' tailboom of the Neptune. To be able to utilise the MAD, the crew had to fly the aircraft through an elaborate and at times most uncomfortable series of manoeuvres to adjust the system by means of compensation for pitch, yaw and roll. Because of inexperience this stomach battering exercise was not always carried out correctly and a lower degree of faith in the system was a result thereof.*

All in all the P2V-5 did not really qualify as a submarine hunter, but as a patrol aircraft it developed an excellent service record. After extensive overhaul the early Dutch Neptunes were transferred to the Portuguese AF in 1961/62 where they served until the latter half of the 1970s.

Replacement — the first issue

The career of the Neptune with the *MLD* has been accompanied by repeated turmoil on the subject of its replacement.

In the late-1950s, when the P2V-5 succession became a point of discussion, it was decided not to opt for the updated -7 version but instead for a partially MDAP-funded supply of Seahawk fighters to be placed on board the aircraft carrier HrMs *Karel Doorman*. No 320 Squadron was re-equipped with Grumman S-2N Trackers and the typical sound of the Neptunes, temporarily vanished from Valkenburg.

At this time another replacement problem posed itself in New Guinea, the last of the Dutch colonies in the East. In 1955 the first of 16 Martin Mariner amphibians had replaced the PBY 5A Catalinas which had been rapidly taken out of service due to serious corrosion problems. However the Mariner fleet never attained its full strength as even before the last aircraft was delivered one example had already crashed. This tragic event was followed by another five crashes within a period of just over two years. The remaining aircraft were grounded in 1959 and ended up on the scrap heap.

Meanwhile increasing tension had arisen between the governments of Indonesia and the Netherlands over the issue of the possession of New Guinea. Surveillance tasks in the region, till then performed by the Mariner, had to be taken care of by four hastily employed civil Dakotas. The necessity for a fast replacement of the Mariner was evident.

Some fascinating proposals for a

successor were brought forward. With the thought of standardisation in mind, one design called for a modified Tracker with a non-foldable stretched wing. However in the basic configuration the interior of the Tracker was already so narrow, that a normal four hour patrol was a very tiring affair. Using the same aircraft for the envisaged 10 hours plus missions would have been pushing aircrew endurance to the limit.

Other contenders included the AVRO Shackleton and the Canadair Argus — both turned down because of their poor take-off performance in hot weather — and a stretched wing Grumman Albatross, at the time still on the drawing board as was also the case with an early design of the Breguet Atlantic. The more advanced P2V-7 version of the Neptune was finally selected and 15 were ordered directly from Lockheed; one of the advantages of this choice was that Lockheed could schedule delivery rather promptly. Lack of funds provoked a series of cost-saving considerations, with one proposal calling for the deletion of the two Westinghouse J34-underwing jets that significantly improved single engine and take off performance. However, an economical compromise was found in a P2V-7 without the Doppler navigation system and the ASW equipment of the US Navy version, but with the wiring already fitted to facilitate installation at a later date if required.

In view of the 'action' potential in New Guinea, the aircraft were fitted with the nose

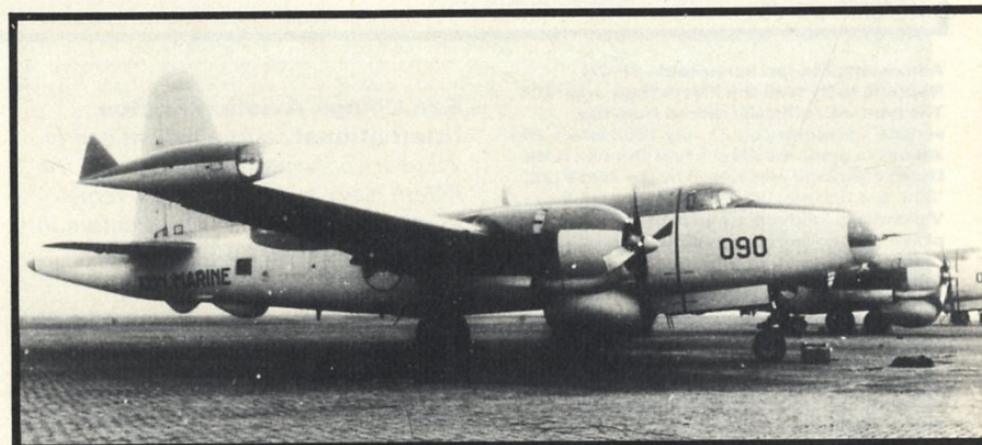


Above: One of the initial P2V-5s to be delivered to the *MLD*, and the first in the serial sequence, was 19-21 (c/n 5273). The aircraft was photographed in the US shortly before delivery to the RNeth Navy; the Neptune in the middle is 19-28 or '093' as it was re-serialised in 1958. Photo: Kon. Marine/Maritieme Historie

Left: Originally carrying the marks 19-25, this P2V-5 was sprayed in a new paint scheme and re-serialised as '090' in 1958. Photo: Kon. Marine/Maritieme Historie

Below left: A 1963 winter scene with 'B' (Biak) and 'V' (Valkenburg)-coded P2V-7B Neptunes: framed by the tail of '207' are '205' (left) and '206'.

Photo: Kon. Marine/Maritieme Historie



AIRCRAFT ILLUSTRATED

cannons derived from the P2V-3 variant, although only four of the original six Hispano 20mm cannons were installed.

On 8 September 1961, the P2V-7 serialised '201' became the first to enter *MLD* service. After a trans-Pacific crossing the aircraft joined the revived No 321 Squadron at Biak, New Guinea. The last of the 15 Neptunes left the Lockheed Burbank factories in early-March 1962: 11 aircraft out of the batch were directed to Biak and were coded 'B', the remaining four went to Valkenburg and acquired the 'V' on their tails.

In action

New Guinea became a 'live' battleground for the Neptunes involving the aircraft in a series

of rather unusual missions. Initially the Biak-based aircraft took over the 'Kampong' (village) recce-patrols that were previously flown by Mariners and later Dakotas. By means of an agreed sign put up on the ground by the village chiefs, the crews had to check the safety status in and around selected Kampongs throughout the jungle covered archipelago.

By the end of December 1961, the atmosphere between the Dutch and Indonesians became more tense and, to be able to detect any possible interdiction from the Western approaches, the Neptunes set out on prolonged Airborne Early Warning (AEW) missions. Effectiveness of these patrols was proven on 15 January 1962 when a landing party consisting of three torpedo boats was sighted and eventually intercepted by Dutch vessels. Nevertheless, two months later the Indonesians successfully landed on some of the small outer islands.

No 321 Squadron reached its full strength in early-April and handled an ever broadening scope of activities including bombing raids — with 500lb bombs stowed in the weapons' bay — and strafing of Indonesian bridgeheads with board cannons and underwing 5in rockets.

On 17 May 1962, vectored by the radar of HrMs *Groningen*, '207' intercepted a hostile C-47 and in the following 'dogfight' hit the aircraft with its cannons forcing the Indonesian pilot to ditch his plane. On the same day an enemy B-25 Mitchell, with the assistance of a thunderstorm, managed to escape a similar treatment! Although its

appearance may not suggest so, the Neptune is a very manoeuvrable aircraft: the two underwing jets give it extra acceleration and spoilers on the upperwing surface enable the pilot to perform sharp turns by means of effectively 'stalling' one wing.

Even so, in the New Guinea conflict the P2V-7s were 'out manoeuvred' several times by Indonesian C-130B Hercules which simply speeded up when the radar return of the Neptune appeared on their screens.

A truce between both countries was agreed upon on 18 September 1962 and after intermediate UN supervision, New Guinea became West Irian under Indonesian sovereignty. One Neptune lost during the conflict, though not as a result of enemy action, was '200' which ended its career with the *MLD* on 11 May 1962 when a turbine blade separated from one of the jets, penetrated the fuselage and damaged the hydraulic system. An emergency landing at Biak followed and, heading for '206' just being refuelled, the ill fated Neptune was stopped by a trench.

320 Squadron

After the New Guinea conflict ended, No 321 Squadron was disbanded and, 'V' coded upon their return to the Netherlands, its aircraft joined the four examples that had been temporarily added to the Beechcraft TC-45J and Sikorsky SH-34J inventory of No 5 Squadron.

On 20 December 1962 the 'old' Tracker-equipped No 320 Squadron was re-designated No 2 Squadron and the ex-No 321 Squadron Neptunes became the inventory of a 'new' 320. By the end of February 1963,

*The MAD system was also easily 'fooled' by foreign objects such as ship wrecks as dispersed in large numbers over the various exercise areas.

No 5 Squadron passed on its four Neptunes to '320' and with these aircraft the unit entered a long and lively period in its existence, one that had already been very eventful in the preceding years.

No 320 Squadron is the oldest unit in the Dutch Armed Forces, and was formed at RAF Pembroke Docks in Wales in August 1940 equipped with Fokker T-VIII W amphibians that had escaped the advancing German forces.

Within three months Lockheed Hudson bombers replaced the Fokkers and RAF Leuchars became the new base in March 1941, followed a year later by a move to RAF Burcham Newton. In early 1943 the unit's Mitchells performed a total of 3,252 missions in support of the D-Day invasion. Throughout the conflict 33 aircraft were lost in action with the resultant loss of many lives.

With 20 surplus Mitchells, the unit initiated post-WW2 maritime patrol tasks in 1949. ASW was added to these duties and as previously described, Harpoons and Trackers preceded the Neptune in the inventory of the squadron.

The SP-2H Update

Shortly after the Neptunes had returned from the East Indies, Aviolanda (the Woensdrecht based Fokker-affiliated overhaul centre), began a series of complex modifications to bring the aircraft from P2V-7B to P2V-7S standard, by then re-designated the SP-2H.

As these fleet modifications were combined with the major overhaul when due for each aircraft, they were spread over a period of more than three years. Externally the most drastic change was the replacement of the nose cannons by a glazed hood to serve as an observer's station. Internally a whole range of new equipment was introduced.

A new MAD system filled the tailboom and included an adjusting system coupled to the auto pilot that was rapidly nicknamed 'Rock & Roll Box'. A LORAN alfa navigation system was installed and wiring applied for a Doppler follow-up; however this was never fitted to the Dutch aircraft. In the weapons' bay new bomb racks were mounted.

A major portion of the update was the addition of a range of ASW systems. The 'Julie' system comprised of six receivers for passive sonobuoys also capable of continuous wave homing for approach navigation. The passive buoys listened to by the 'Julie' could be 'activated' by Practise Depth Charges (PDC) also named Signal Underwater Sound. The echoes of the explosions of the PDC's provided the extra dimension. The great disadvantage of the 'Julie' system was that an echo production could only be achieved once every two minutes: a frequency much too low to keep pace with fast nuclear and diesel electric submarines.

More useful was the Jezebel system capable of registering the frequency spectrum of underwater sounds and also to determine the position of the source. Initially only a special type of passive buoy was used for the Jezebel but in a later stage the



'Pingers' were also introduced; 'Pinger' is the nickname for an active sonobuoy derived from the sound it transmits when being activated. Four separate VHF receivers were part of the Jezebel system and their individual findings were recorded on a paper roll that produced an echo signature. Each type of submarine produced a characteristic return so that the recordings became subject of exchanges with the various Neptune operators.

A new IFF (Identification Friend or Foe) device was added to the ESM equipment and provided the SP-2H with the capability to separate radar signals by frequency polarisation, pulse width, pulse repeat frequency and by direction.

The fuselage section forward of the wing seated three operators (Julie/Jezebel, Radar, ESM) together with the Tactical Co-ordinator (TACCO). The TACCO was the vital link between operators and flightcrew and his main tool was a navigation plotter board on which a moving light — the 'crab' — indicated the aircraft's position. A smaller size plotter on the flightdeck could be linked to the TACCO station.

Immediately aft of the wing was located a communication centre that even included a tapping-key. As all MLD crews are frequently detached to sailing units, Neptune aircrew easily reverted to the traditional link with the outside world, especially when voice communications were uncomfortably disturbed. Moving further down the fuselage

was a small kitchenette, stowage for markers and sonobuoys, the retortube, seats for the armament officer and an extra engineer and last, but certainly not least, a very basic lavatory!

On the flight deck the flight engineer was assigned a not very comfortable flat seat in between both pilots. In the 'basement', reached after passing through a hatch, climbing down the steps and crawling through a short but narrow corridor, was the observer's station. Equipment surrounding the relatively 'luxurious' seating included the MAD paper recorder and a control column to operate the powerful searchlight mounted in the starboard tip tank. This light could be operated similarly by the co-pilot, who had to avoid to look to his right in order not to be blinded for a considerable time by its bright beam.

The weapons' bay could accommodate torpedoes, bombs and mines and was also fitted for the carriage of the so called 'G-Dropper', a dinghy that was part of the SAR equipment. Another interesting belly occupant at times was the mail container used for deliveries to crews of Dutch floating weatherstations in the Atlantic for whom the Neptunes were a monthly welcome visitor. The SP-2H was also fitted for the carriage of nuclear depth charges.

Moving into the 1970s

Between October 1965 and February 1966, four Neptunes were acquired by the MLD

Dutch Neptunes Service Summary

P2V-5

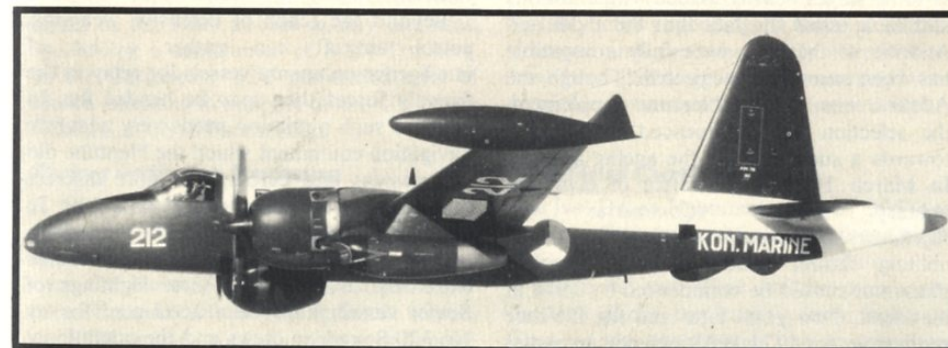
c/n	Serial	Serial as of 1958	Into service	Out of service	Delivery to Portugal	FAP Serial
5273	19-21	086	27-12-53	18-08-60	09-03-62	4701
5274	19-22	087	16-12-53	16-08-60	07-06-61	4702
5275	19-23	088	15-12-53	06-10-59	04-06-61	4703
5276	19-24	089	21-01-54	15-06-60	03-02-61	4704
5277	19-25	090	23-12-53	16-08-60	20-07-61	4705
5278	19-26	091	21-01-54	18-09-59	21-04-60	4706
5279	19-27	092	21-01-54	28-10-59	06-10-60	4707
5280	19-28	093	21-01-54	16-08-60	09-10-61	4708
5281	19-29	094	24-02-54	19-08-60	07-12-61	4709
5282	19-30	095	25-02-54	12-05-60	02-12-60	4710
5283	19-31	096	24-02-54	22-10-59	29-07-60	4711
5284	19-32	097	24-02-54	28-06-60	18-04-61	4712

P2V-7B/SP-2H

c/n	Serial	Into Service	Out of Service	Fate
7238	200	17-10-61	08-08-62	Crashed Biak
7241	201	08-09-61	13-11-81	Museum Kamp van Zeist Soesterberg
7245	202	27-09-61	21-09-80	Used for firebrigade exercise
7248	203	24-10-61	20-03-82	Maritime museum Curacao
7251	204	15-11-61	21-07-82	UK Museum (under discussion)
7252	205	15-11-61	25-01-82	Destined for Delft University
7254	206	21-11-61	06-11-72	Broken up for spares
7257	207	04-12-61	09-03-81	Broken up for spares
7259	208	14-21-61	24-04-72	Broken up for spares
7261	209	02-01-62	09-04-80	Broken up for spares
7263	210	16-01-62	15-06-82	Anthony Fokker Technical School Haarlem
7265	211	30-01-62	23-01-79	Broken up for spares
7267	212	08-02-62	23-01-65	Crashed North Sea
7268	213	27-02-62	18-12-79	Broken up for spares
7269	214	02-03-62	21-05-81	Broken up for spares
7142*	215	25-10-65	13-05-76	Broken up for spares
7143*	216	25-10-65	11-07-80	Monument at Valkenburg
7153*	217	25-10-65	12-02-80	Broken up for spares
7157*	218	25-10-65	28-08-81	Museum Soesterberg & Delft University

*BuAer Nrs:

215	144691
216	144692
217	146434
218	146438



Top left: The ill-fated '200' which crash-landed at Biak on 11 May 1962 after a turbine blade separated from one of the jets, penetrated the fuselage and damaged the hydraulic system. Photo: Kon. Marine/Maritieme Historie

Above left: The P2V-7B Neptune flightline at Biak in 1962: '200' is absent from the line-up. The 10 aircraft are arranged in numerical sequence with '201-208' and '213-214'. Photo: Kon. Marine/Maritieme Historie

Above: P2V-7B Neptune '212' photographed shortly before delivery to the MLD on 8 February 1982. The white uppersurface was originally applied to the service's aircraft to reflect the sun and thus reduce cabin temperature. However, it proved 'dangerous' in New Guinea as it stood out extremely well in the moonlight! Photo: Kon. Marine/Maritieme Historie

Right: Valkenburg-based '205' overflying part of the Curacao coastline. Photo: Kon. Marine/Maritieme Historie

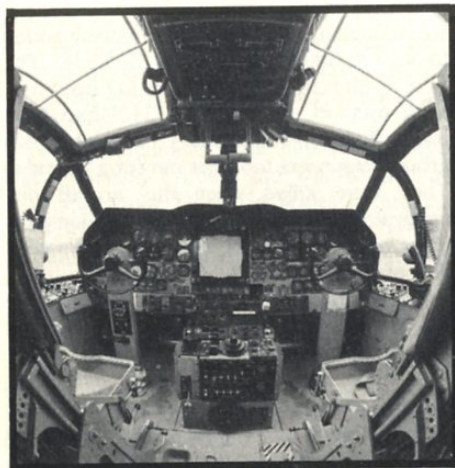


from the French *Aéronavale* and, after extensive modifications by Aviolanda, were added to No 320 Squadron's fleet as '215-218'. The French aircraft brought the MLD inventory to a total of 17 SP-2Hs: '212' had been tragically lost on 23 January 1965, when two ground-engineers took her out for a 'joyride'. They were killed when the aircraft disintegrated on hitting the sea a few kilometres West of Katwijk after having just missed a row of buildings on its climb out.

By the time all Neptunes were modified to SP-2H standard and the 'teething troubles' that accompanied the introduction of the new ASW equipment had been overcome, the aircraft was in fact already out of date. A period commenced during which frustration about deficiencies of the aircraft was continuously over-ruled by admiration for its usefulness in other tasks and, at a later stage, by the pride of still keeping her going!

The LORAN navigation system produced repeated discrepancies and, particularly during ASW missions, the position had to be at least hourly re-established with the aid of a reference-sonobuoy. The Omega navigation destined for the Orions (the Neptune's replacement) was eventually purchased four years in advance of their arrival to be fitted in the SP-2H. Yet, even though this greatly assisted surveillance and SAR tasks and improved flight safety — especially on the trans-Atlantic ferry-flights to the Antilles — the Omega could not compensate for the lack of automated data processing that caused the Neptune's early obsolescence in terms of ASW. Ever faster and quieter submarines demanded a 'think-ahead' capability for buoy positioning that was simply unattainable.

Meanwhile another 'snag' slowly but surely affected Neptune operations. Both jet and prop-engines used the high octane (115/145) F22 fuel, as was also used for example by the Civil Super 'Connies' and their military C-121 counterparts. As these types became rarely seen, the necessity for international airports to have F22 available no longer existed, so that supplies were ever harder to find. For shorter trips the F18 100/130 octane fuel could be used, but this resulted in a reduced performance and additional wear and tear. Especially in the



Above: Extreme wide-angle lens photograph of the Neptune flightdeck.
Photo: Kon. Marine/AVD-Foto/Ops

Centre: A view looking aft in the Neptune cabin with the TACCO and two operators.
Photo: Kon. Marine/AVD-Foto/Ops

Top right: A passive sonobuoy (AN/SSQ-41A) being lowered into one of the launch tubes located towards the rear of the cabin of the Neptune. Photo: Kon. Marine/AVD-Foto/Ops



last year of *MLD* service, Neptune-missions had to be frequently re-scheduled due to fuel availability problems.

Replacement — the second phase

Already in the mid-1950s a Neptune successor study was being conducted in the US. In 1958 a NATO committee, aiming a joint purchase and related standardisation, drew up a specification for a Long Range Maritime Patrol Aircraft (LRMP). This led to a design competition between European and US manufacturers; however the latter only contributed on a low profile in the light of the well advanced development of the P-3A Orion and also because the Washington government was pushing for more involvement of the European aircraft industry. Two designs competed in the last stage of the contest: one by AVRO in the UK and one by Breguet in France. Both were much alike and in view of its equipment the British design was initially favoured over the French proposal. But a miscalculation in the specifications for the AVRO aircraft and the prior agreement not to allow for corrections in the designs as presented, made the Breguet project the winning contender. Named 'Atlantic' the aircraft first flew on 21 October 1961.

When commitments had to be made for production batches, the *MLD* had just faced the Mariner/New Guinea dilemma and in view of the hasty Neptune purchase, was unable to firmly commit for a specific number of Atlantics. In order not to

jeopardise the project the Dutch Navy stated in July 1961 that 'the Atlantic would be included in the future procurement of maritime patrol aircraft whereby quantity would depend on other plans and the financial situation'. A statement that would considerably influence a later purchase.

The fire in 1968 on board the aircraft carrier *HrMs Karel Doorman* and the decision not to replace the vessel brought up the need to compensate for its aerial potential in the shape of LRMPs. By that time the P-3B Orion was already available and a serious competitor for the Atlantic. Although the *MLD* favoured the choice of the Orion, the then seated Dutch government decided to order the Atlantic aiming to support European collaboration and the Dutch aircraft industry.

The Atlantic/Orion selection process was in some stages heavily loaded with emotions and as a result the fact that the P-3B and Atlantic at the time were fully compatible has been somewhat neglected. Though the Atlantic was more a Neptune supplement, the selection perils influenced the process towards a successor for the ageing aircraft. In March 1972 a committee of civil and military experts (*Commissie van Rijckevorsel*) assigned to study the Dutch military future, defined that the Neptune phase-out should be commenced by 1978 at the latest. Two years later and the Defence projections for 1974-1983 included an earlier phase out and targeted a 1983 availability of 13 replacing aircraft. The 'commitment' was weakened by other paragraphs and requests to re-assess the Dutch NATO-tasks. While NATO studies in this respect progressed, the defence budget for 1976 mentioned a number of cost saving measures that included the termination of the activities of No 320 Squadron and its aircraft and the postponement of the Neptune replacement!

A wave of protests followed and culminated in a spontaneous and unusual low-level formation flight over the houses of Parliament in the Hague and a mass meeting in Amsterdam. Embarrassed by these protests, the government had to come back to its decisions. A definite selection procedure was finally initiated in 1978 between Nimrod, P-3C Update II Orion and Atlantic *Nouvelle Generation* (NG). Noise abatement and costs excluded the former one. Despite a strong drive from Fokker in favour of the

Atlantic NG and a range of proposals to overbridge the gap till the projected 1985-86 availability of this aircraft, the *MLD* preference for the Orion was honoured and 10 aircraft were ordered with another three included in future budgets.

SAR and Surveillance

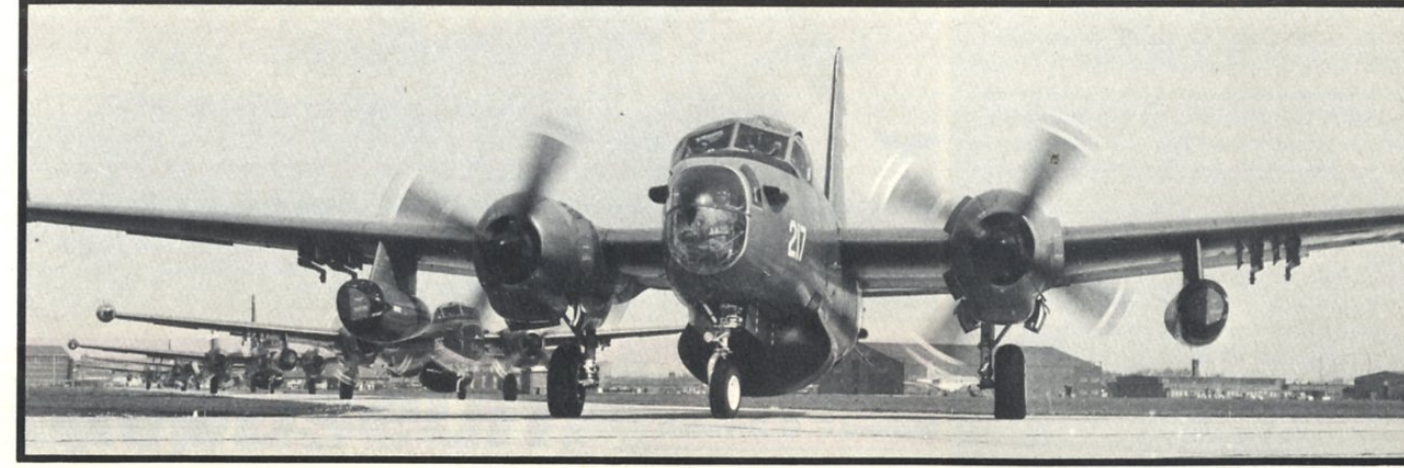
After 20 years of *MLD* operation with the SP-2H, several tasks were performed with great effectiveness till the last moment and if serviceability had not become more problematic, might have been continued for an even longer time. The Neptune's flightdeck offers an unlimited 180° view and so does the observer's station in the nose. The APS-20E radar and also the ESM equipment gave the crew excellent opportunities to fulfil an ever increasing NATO demand for information on movements of surface vessels.

Beyond the reach of defensive weapons, patrol aircraft can gather a lot of intelligence on enemy vessels for relay to the friendly forces they may be headed for. In wartime such a mission needs very accurate navigation equipment which the Neptune did not possess and certainly a more discrete radar output than that of the APS-20E. In peacetime however, 'be seen' procedures prevail and this is where the Neptune became extremely useful. Many first sightings of Soviet vessels have been accounted for by No 320 Squadron crews and the operational photofiles are filled with an array of detailed vessel portraits. Such series generally are composed of nine pictures: eight taken at 45° intervals when circling the vessel, a ninth one taken vertically during a 90° turn at minimum 1,500ft above the target. A pass over the top at lower level could be interpreted as provocative.

As time went by, an ever increasing amount of pictures was added to the files that depicted evidence of oil pollution as detected by '320' crews and used for prosecutions of the vessels or oilrigs it was caused by. Search and Rescue (SAR) missions have played an important role in the aircraft's service history.

The Rescue Co-ordination Centre at Valkenburg covers the whole of the Netherlands and the part of the North Sea included in the Dutch Flight Information Region (FIR). SAR Neptune crews had to be ready to fly within ½ hour and one aircraft was kept

AIRCRAFT ILLUSTRATED



Above: SP-2H Neptunes lining-up for take-off at Valkenburg, to begin a flypast that, until several years ago, was a traditional event on 30 April, the Queen's birthday.
Photo: Kon. Marine/AVD-Foto/Ops

Right: A unique photograph taken in 1973 when a Russian counterpart of the Neptune, the Ilyushin Il-38 (NATO code-name 'May'), was 'intercepted' over the Northern Atlantic by a No 320 Squadron SP-2H.
Photo: Kon. Marine/AVD-Foto/Ops



on full time standby. Over the top of the vessel in distress, ditched pilot or any other 'target', the Neptune would act as a communications platform co-ordinating actual rescue by helicopter or life-boat. SAR was the main portion of the Neptune task when deployed to Curacao in the Netherlands Antilles. Since 1974 three aircraft were based at the Hato airbase at any one time, succeeding a detachment of S-2N Trackers. In the Caribbean, '320' performed a lot of search missions in support of the US Coast Guard Station at Puerto Rico.

Flying with the Neptune

A hazy sunshine accompanied the author's January 1982 flight on board '205'. The mission was a surveillance training mission over the North Sea. In the absence in the area of any known interesting Soviet vessels, the ESM antenna was adjusted to the general merchant marine radar frequency so that training targets could be easily found. With the plane fully occupied manoeuvring space was marginal and initially flying backwards with no reference to a horizon proved an unusual experience. When seated on the flightdeck, the first target contacted was Sealink's *ms Prinses Beatrix* passed at a level below the top of her masts. Next the ESM operator and TACCO set us on course to what appeared to be a Soviet merchantman carrying an impressive number of aials and consequently it became subject of a photo run, including some aerobatics imposing 2G loads on the crew. During the various stages of flight, the aircraft's radio altimeters warning set at 100ft sounded several times! Except for target approaches, the patrol was flown at 3,000ft with an average 160-170kts. A southbound run along the coast line at a 1,000ft flight level was followed by a low-

level pass through the Rotterdam deep sea anchorage and after almost three hours '205' safely touched down at Valkenburg.

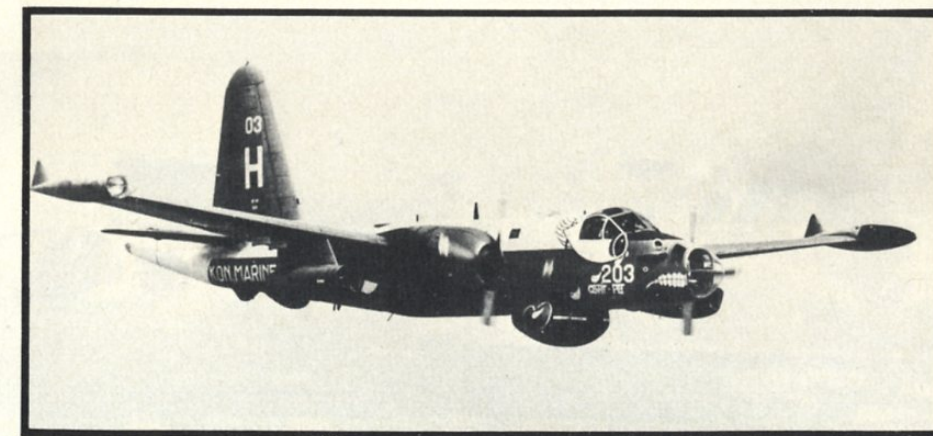
Although the Neptune flies very comfortably, crews spending 10 hours plus in the cramped and somewhat stuffy interior must have been glad to get out... especially when tropical circumstances accompanied such a mission!

The Final Curtain

The last Dutch Neptune to fly was '205' and the aircraft 'intercepted' the first four Orions in the air on their way into Valkenburg.

Space did not allow for the many tales that tell about the lengthy ferry flights to Curacao, the kitchenette's 'one square metre Haute-Quisine' that produced complete Indonesian rice-tables or the inventiveness of

Below: Tears of farewell painted on SP-2H '203' for its final flypast over Hato on 20 March 1982. Photo: Kon. Marine



ground engineers that enabled the Neptune to continue to serve as long as it did.

An excellent aircraft takes over but unlikely it will be able to revive the affection between man and machine that so such characterised the Neptune in *MLD* service.

Acknowledgments:

The author would like to thank Cdr (Ret) H. v/d Kop, staff and crews of No 320 Squadron, *Fotodienst Soesterberg*, *Audio-Visuele Dienst Valkenburg*, *Marine Voorlichtingsdienst* and *Afdeling Maritieme Historie* for the support received in compiling this article.

Note:

'Op de grens van Zee en Lucht' (on the edge of the sea and sky) is the title of a lavishly illustrated reference work on the Neptune in Dutch service published — in Dutch language — by *De Boer Maritiem* (ISBN 90 228 1868 3)

TEN miles south of Tucson, Az on the edge of the vast Davis-Monthan AFB, stands what is arguably one of the best and most interesting air museums in the world. With a collection of approximately 120 vintage and veteran aircraft, the Pima Air Museum has the third largest display of factory built aircraft in the US.

The idea of setting up the museum was conceived in 1966 by Col I.R. Perkin, the commander of the Military Aircraft and Disposition Centre of Davis-Monthan AFB. Later that year the collection was established by the Tucson Chapter of the Air Force Association. Surplus government land was bought and a 30 acre site was fenced off from the surrounding desert scrub. In October 1969, 35 aircraft of the Davis-Monthan display were taken over by the museum, but it was not until 1976 that the collection was finally opened to the public.

For an aviation enthusiast the experience of a visit is over-whelming. Many of the aircraft exhibited are exceptionally rare and cannot be seen outside the US. The Consolidated B-24J Liberator, for example, was donated to the museum by the Indian Government and arrived at Pima in 1969. Another rare aircraft is the Douglas B-18 or Bolo. This is the oldest bomber at the museum and the concept behind it dates back to 1935. Interestingly enough this somewhat unlikely looking bomber won a competition with the Boeing B-17. However, once the early problems of the Flying Fortress were solved it, of course, became one of the main American bombers of WW2, while the B-18 was relegated to anti-submarine duties. Another unusual exhibit is the Douglas B-23 Dragon built in 1939, of which only 38 were completed. Although the idea behind the concept was to improve upon the B-18, the type was eventually used as a transport and patrol aircraft during WW2; incidentally, it was the first US Army Air

This page, top to bottom: A view across part of the compound of Pima Air Base, with Boeing YC-14, 0873, one of only two examples to be built.

One of the star exhibits at the museum is the ungainly looking Douglas B-18 or Bolo.

The Lockheed C69 Constellation on display was the 10th airframe built and it is presented in the old-style livery of TWA.

Among its vast collection the Pima Air Museum can boast a rare North American F-107A of which only three were constructed.

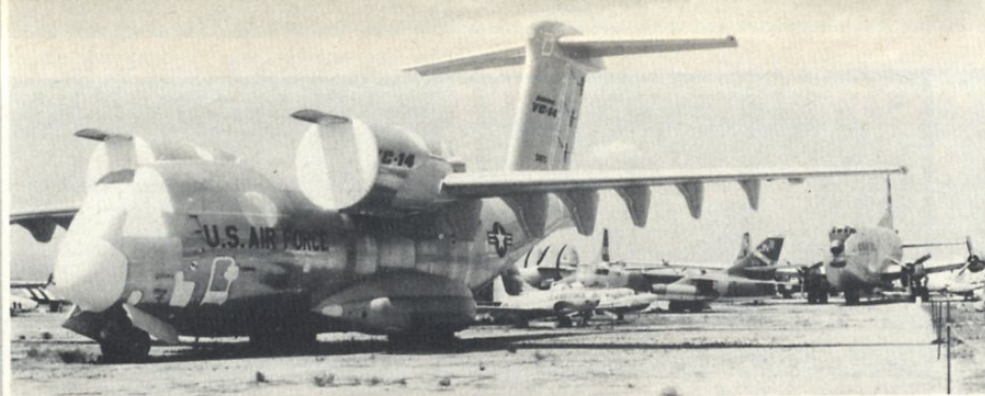
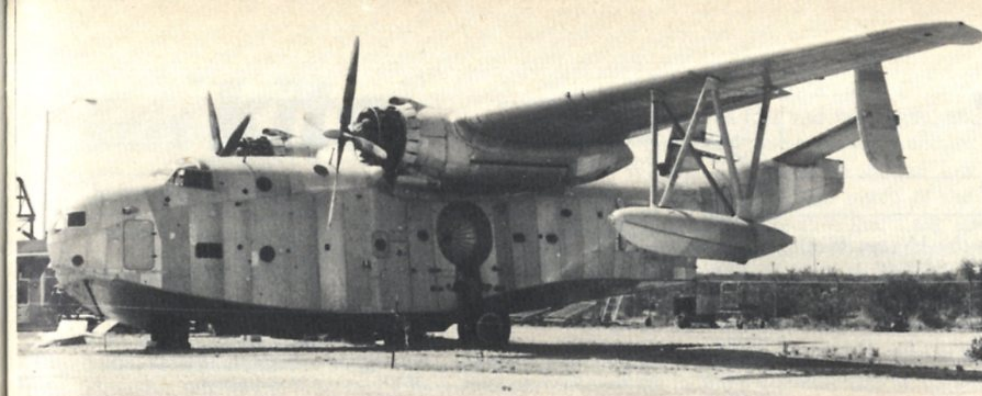
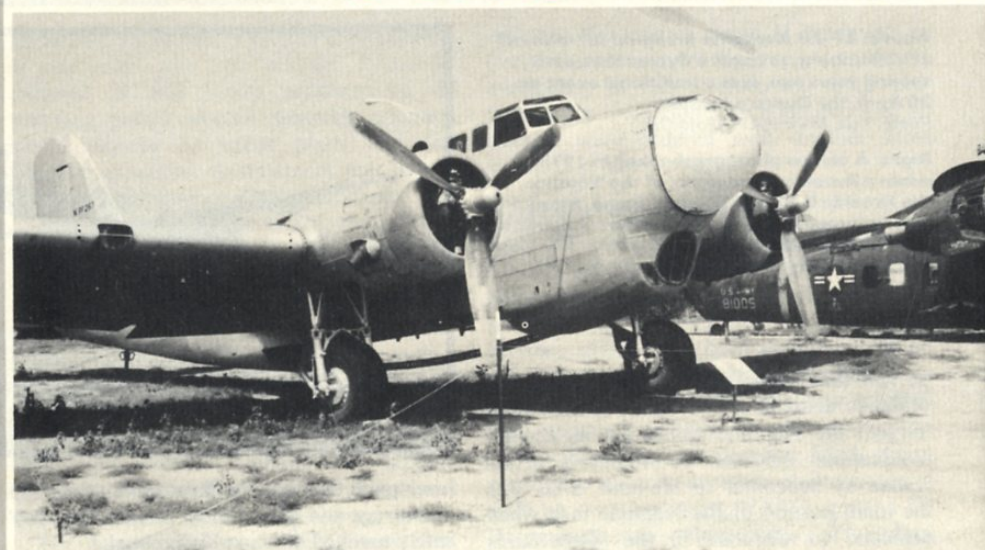


Photo report by
Richard C. G. Drysdale

A tour of Pima Air Museum



Corps machine to have a tail turret.

The Lockheed C69 Constellation on display was the 10th airframe built. Initially the aircraft was used by the US Army Air Corps between 1945 and 1948 before it was taken over by TWA; the aircraft was actually restored by a TWA team. Of particular interest is the North American F-107A. The type, of which only three were built, never entered operational service because it was beaten in a competition by Republic's F-105. The Martin PBM-5A Mariner on display is the only known surviving example of the 1,235 aircraft built.

Other especially rare aircraft include a Boeing S-307 Stratoliner of which only 10 were built, a McCulloch Hum-1 helicopter, one of the two Boeing YC-14s constructed, likewise one of the pair of McDonnell Douglas YC-15s, a Douglas C-124C Globemaster, a Bell P-63E King Cobra and a Lockheed F-5G Lightning.

The museum site is ideal. The low humidity and rainfall of Tucson together with the low soil acidity make it an excellent location; this is why the nearby Davis-Monthan AFB was selected as the Military Aircraft and Storage Disposition Center. The museum is well-laid out and although, with one exception, it is not possible to enter any of the aircraft, there is no difficulty in obtaining good views of all the exhibits. The one aircraft that visitors are allowed to enter is the VC-118, the military version of the DC-6, which was used by Presidents Kennedy and Johnson. The interior of the aircraft has been faithfully restored.

If visiting Tucson, a visit to the nearby Davis-Monthan AFB is essential for any aviation enthusiast. Short tours for the public are organised every Wednesday and Saturday by the Public Relations department of the base. A much longer tour lasting much of the day is organised for enthusiasts every second Saturday of the month.

This page, top to bottom: Believed to be the sole remaining survivor of its type is the museum's Martin PBM-5A Mariner.

The squat-looking McCulloch Hum-1 is one of the more unusual helicopters exhibited, albeit without its rotor blades.

The Convair B-58A Hustler with its distinctive ventral pod that could carry a variety of payloads, ranging from fuel and nuclear weapon to cameras and electronic countermeasures gear.

Always a popular aircraft on display at the museum is a Boeing B-29 Superfortress.

Compiled by A. J. Wright

ONE of the most interesting items this month is the Hornet Moth allocated the previously unused period mark of G-ADRH. It is in fact a new machine currently being constructed using some of the mortal remains of HB-OBE, an aircraft that later became F-AQBY. Of the other early registrations issued, G-AGIV was used in 1981 for a short time by the Ruskin Dakota G-BHUB for the TV programme *Airline*. Since this was not an official allocation, it has now been taken up by the ex-Belgium Cub.

The BAe 146 G-ODAN is not surprisingly destined for Dan-Air, to be followed by a second example of the type, G-BKHT. It remains to be seen if this will also acquire a new identity. It is interesting to note that many of the official registration and licence applications specifying this type refer to it as the HS146.

Registration	Type	C/n	Owner or operator
G-ADRH	DH87B Hornet Moth	IMC/8164	I. M. Callier
G-AGEG	DH82A Tiger Moth	82710	M. P. Crispe (N9146/D-EDIL/PH-UFK/A-32/R4789)
G-AGIV	Piper J-3C-65 Cub	12676	M. Pickering (OO-AFI/00-GBA/44-80380)
G-BJZO	Cessna F182RG	01883	Northair Aviation Ltd
G-BJZX	Grob G109	6109	Gablemere Ltd
G-BKAH	Scheibe SF-36	4105	B. J. Willson & F. C. Y. Chaung
G-BKBO	Colt 17A balloon	342	Courage (Eastern) Ltd
G-BKFC	Cessna F152-II	1443	D. W. Walton
G-BKFL	Aerosport Scamp	10814	I. D. Daniels
G-BKFN	Bell 214ST	28109	British Caledonian Helicopters
G-BKFP	Bell 214ST	28110	British Caledonian Helicopters
G-BKFY	Beech C90 King Air	LJ-1028	Medop Ltd
G-BKFZ	PA-28R Cherokee Arrow 200	7635127	L & M Food Group Ltd
G-BKGG	Bell 206L-1 LongRanger	45236	Alan Mann Helicopters Ltd
G-BKGO	Piper J-3C-65 Cub	12417	J. A. S. & I. K. Baldry (CN-TVO/F-DACK/CN-TUK/F-DBTK/44-80121)
G-BKGP	Thunder Ax6-56Z balloon	444	Thunder Balloons Ltd
G-BKGR	Cameron O-65 balloon	865	S. R. Bridge
G-BKGW	Cessna F152-II	1878	Agricultural & General Aviation Ltd
G-BKGY	Cessna F182Q	0043	Cooper Aviation Ltd (OO-CNI)
G-BKGZ	Bensen B-8	01-1038	C. F. Simpson
G-BKHA	WS-55 Whirlwind HAR10	WA-109	R. Windley (XJ763)
G-BKHB	WS-55 Whirlwind HAR10	WA-33	R. Windley (XJ407)
G-BKHC	WS-55 Whirlwind HAR10	WA-348	R. Windley (XP328)
G-BKHD	Baby Great Lakes	8133-F-8028	P. J. Tanulak
G-BKHH	Thunder Ax10-160 balloon	460	Thunder Balloons Ltd
G-BKHI	BAe Jetstream 3101	604	British Aerospace PLC Aircraft Group
G-BKHJ	Cessna 182P	64129	Avgur Films Ltd
G-BKHK	BAe 125 srs 700B	257189	Scorpio Aviation & Marine Ltd
G-BKHL	Thunder Ax9-140 balloon	461	Thunder Balloons Ltd
G-BKHM	Ben Air Sparrowhawk VL12/35	001	Ben Air Ltd
G-BKHP	P56 Provost T1	226	M. J. Crymble (WW397)
G-BKHR	Luton LA-4A Minor	10228	R. J. Parkhouse
G-BKHS	PA-34-200T Seneca	8233045	CSE Aviation Ltd
G-BKHT	BAe 146-100	E1-007	British Aerospace PLC Aircraft Group
G-BKHU	AS350B Ecureuil	1629	McAlpine Helicopters Ltd
G-BKHV	Taylor JT-2 Titch 1	10832	P. D. Holt
G-BKHV	Glassair SH-2	392	N. Clayton
G-BKHV	Bensen B-8M	01-1035	D. H. Greenwood
G-BKIA	SOCATA TB-10 Tobago	322	Air Touring Services Ltd
G-BKIB	SOCATA TB-9 Tampico	323	Air Touring Services Ltd
G-BKIC	Cameron V-77 balloon	859	C. A. Butler
G-BKIK	Cameron DG-19 airship	CN776	Cameron Balloons Ltd
G-BKIM	Unicorn UE-5A balloon	82028	I. Chadwick & K. H. Turner
G-BKSC	Evans VP-2	V2-482MSC	G. J. Taylor
G-BNBH	Hughes 269C	1078	Southern Air
G-CRZY	Thunder Ax8-105 balloon	058	Thunder Balloons Ltd (G-BDLP)
G-DJHB	Beech A23-19 Musketeer	MB-200	D. J. Bruce (G-AZZE/LN-TVH)
G-FYEU	Rango NA-8 balloon	RGS-32	R. Scatthdee
G-FYEV	Osprey Mk 1C balloon	ASK-294	M. E. Scallen
G-GAYL	Learjet 35A	429	Heron Management PLC (G-ZING)
G-JETD	Cessna 550 Citation II	0419	IDS Aircraft Ltd
G-JTIE	Cessna 421C	0437	Eastern Air Executive (G-RBBE)
G-LING	Thunder Ax7-65-1 balloon	446	Bridges Van Hire Ltd
G-MBXA	Southern Aerosports Scorpion	0AL-1	Osprey Aviation Ltd
G-MBXB	Southdown Sailwings Puma	PFL-01	Peninsula Flight Ltd
G-MBXC	Eurowing Goldwing	EW-24	A. J. J. Bartak
G-MBXD	Huntair Pathfinder	010	R. J. Woodland
G-MBXE	Hiway Skytrike	GS-1	G. Stevens
G-MBXF	Hiway Skytrike	JGR-1	J. G. Robinson
G-MBXG	Mainair Triflyer	05220182	R. E. D. Bailey
G-MBXH	Southdown Sailwings Puma	L195/394	A. J. Milne & D. L. Scott
G-MBXJ	Hiway Demon Skytrike	DM-17D	A. Roder & J. W. Curtiss
G-MBXK	Ultrasports Puma	KND-01	K. N. Dickinson
G-MBXL	Eipper Quicksilver MX2	3624	Flying Machines (circa 1910) Ltd
G-MBXM	American Aerolights Eagle	2664	P. Apsley

Registration	Type	C/n	Owner or operator
G-MBXN	Southdown Sailwings Lightning L170	L170/293	T. W. Robinson
G-MBXO	Trident	003	M. I. Watson
G-MBXP	Hornet Skytrike	E1-E25PS-40	M. J. Phizacklea
G-MBXR	Hiway Skytrike 250	AG-01	A. Grant
G-MBXS	Electra Floater	F1482	R. G. Hooker
G-MBXT	Eipper Quicksilver MX2	3383	Long Marston Aviation Co Ltd
G-MBXU	Rotec Rally 2B	015-5	M. Cowan & J. K. Cook
G-MBXV	Gemini Hummingbird	102	Micro Aviation Ltd
G-MBXW	Hiway Trike	OS-17D	N. G. Arthur
G-MBXX	Ultralight Flight Mirage II	111	Newell Aircraft & Tool Co Ltd
G-MBXY	Hornet	HO100	C. Leach
G-MBXZ	Skyhook TR-2	TR2/26	Dennar Engineering Ltd
G-MBYA	Southern Aerosports Scorpion	IMS-01	Inkerman Microlight Sales Ltd
G-MBYD	American Aerolights Eagle	3510	J. M. Hutchinson
G-MBYE	Eipper Quicksilver MX	12003	Microlight Airport Services Ltd
G-MBYF	Skyhook TR-2	TR2/27	G. S. Stokes
G-MBYH	Hill Hummer	001	W. E. Gillham
G-MBYI	Lazair	A522	A. M. Fleming
G-MBYJ	Hiway Super Scorpion IIC	MTOSC2	P. M. Lang & D. R. Leith
G-MBYK	Huntair Pathfinder	012	W. E. Lambert
G-MBYL	Huntair Pathfinder	009	D. B. White
G-MBYM	Eipper Quicksilver MX	JW-01	J. Wiberley
G-MBYN	Superfox	DMR-01	D. M. L. Rowwhite
G-MBYO	American Aerolights Eagle	4467	B. J. & M. G. Ferguson
G-MBYP	Hornet 440cc Flexwing Cutlass	H300	T. J. B. Daly
G-MBYR	American Aerolights Eagle	3310	F. Green & G. McCready
G-MBYS	Ultralight Flight Mirage II	243	Breen Aviation Ltd
G-MBYT	Ultralight Flight Mirage II	98	Breen Aviation Ltd
G-MBYV	Hiway Demon	ITF-01	I. T. Ferguson
G-MBYW	Magpie	PL-10	P. Levi
G-MBYX	American Aerolights Eagle	E2904	T. J. Shepherd
G-MBYY	Southern Aerosports Scorpion	DJL-01	D. J. Lovell
G-MBYZ	American Aerolights Eagle	3975	N. J. Mackay
G-MBZA	Ultrasports Tripacer 330	MAR-01	M. A. Rigler
G-MBZB	Hiway Skytrike	KK17D	R. Davies
G-MBZC	Mainair Solarwings Typhoon	058-12382	I. Rawson
G-MBZD	Hiway Volmet 160cc	GGW-01	G. G. Williams
G-MBZE	Southdown Lightning	FAL-01	P. A. Lee
G-MBZF	American Aerolights Eagle	4183	G. Calder & A. C. Bernard
G-MBZG	Twinflight Scorpion 2 seat	0016	H. T. Edwards
G-MBZH	Eurowing Goldwing	EW-50	B. K. Harrison
G-MBZI	Eurowing Goldwing	EW-51	R. C. Forsyth
G-MBJJ	Ultrasports Puma	L170/415	A. Barnish
G-MBZK	Ultrasports Tripacer 250	AAL-01	Airborne Aviation Ltd
G-MBZL	Weedhopper	ARP-01	A. R. Prior
G-MBZM	Ultralight Sealander	JL82-4ER	S. Comber & A. Crabtree
G-MBZN	Stormbuggy	80-00131	Taurus Aviation Ltd
G-MBZO	Ultrasports Puma	GRH-01	G. R. Hillary
G-MBZP	Mainair Triflyer 330	T3-12182	Army Hang Gliding School
G-MBZR	Skyhook TR-2	RG-01	R. Gill
G-MBZS	Eipper Quicksilver MX	119S-423	K. T. Venning
G-MBZT	Ultrasports Puma	SH-01	S. Hetherton
G-MBZU	Solarwings Skytrike	GNBK-01	G. N. Beyer-Kay
G-MBZV	Skyhook Sabre C	4227-2	G. Borrell
G-MBZW	American Aerolights Eagle	E3104	M. J. Pugh
G-MBZX	American Aerolights Eagle	MJJ-01	M. J. Johnson
G-MBZY	Waspair Tom Cat HM81	ACW-01	A. C. Wendelken
G-MBZZ	Scorpion	PJH-01	P. J. Harlow
G-MJAA	Ultrasports Tripacer	8200258	A. R. Wells
G-MJAB	Ultrasports Skytrike	564	I. W. Kemsley
G-MJAC	American Aerolights Eagle 3	3075	P. R. Fellden
G-MJAD	Eipper Quicksilver MX	3034	K. Cheesewright
G-MJAF	Ultrasports Puma 440	BHA-01	B. H. Ashman
G-MJAG	Skyhook TR-1	TR1/24	G. H. Marshall & M. B. Tomlinson
G-MJAH	Eagle 1A	BW-01	R. L. Arcsott
G-MJAI	American Aerolights Eagle	LFL-01	Leisure Flight Ltd
G-MJAJ	Eurowing Goldwing	EW-36	C. R. Gale & D. J. Royce
G-MJAK	Hiway Demon	FCP-01	F. C. Potter
G-MJAL	Skycraft Scout Mk 3	0433R-3	D. H. Simmonds
G-MJAM	Eipper Quicksilver MX	JCL-01	J. C. Larkin
G-MJAN	Hiway Skytrike	RFPD-01	R. A. V. Pendelbury & F. Dawson
G-MJAO	Hiway Skytrike	KHSSC2	K. R. James
G-MJAP	Hiway 160	21W3	N. A. Bray
G-MJAT	Hiway Demon Skytrike	21V9	W. Davies
G-MJAU	Hiway Skytrike 244cc	APC-01	A. P. Cross
G-MJAV	Hiway Demon Skytrike 244cc	81-00042	B. G. Wilding
G-MJAW	Typhoon Nicholls 250cc	MRN-01	M. R. Nicholls
G-MJAX	American Aerolights Eagle	3877	J. P. Simpson & C. W. Mellard
G-MJAY	Eurowing Goldwing	E58	J. F. White
G-MJAZ	Raven Vector 610	1251	Raven Leisure Industries Ltd
G-OAIM	Hughes 369HS	45072S	J. E. Clarke (G-BDFP)
G-OAUS	Sikorsky S-76A	760219	Air Hanson Ltd
G-OMCL	Cessna 550 Citation 2	412	Micro Consultants Ltd
G-ODAN	BAe 146-100	E1-006	British Aerospace PLC
G-PONY	Colt 31A balloon	434	Lighter-Than-Air Ltd
G-PUMP	PA-23 Aztec 250	7305193	Burch (Aviation) Ltd (G-CDB/N40475)
G-RAFT	Rutan Long-Eze	10734	D. G. Foreman
G-ROOT	AB-206B JetRanger	8046	Godfrey Hope Aviation Ltd (G-JETR/OO-CDP)
G-SCAN	Vinten-Wallis WA-116/100	001	W. Vinten Ltd
G-SCHH	BAe 146-100	EI-005	British Aerospace PLC (G-BIAJ)
G-SOOD	Hughes 369D	1142D	Southern Air
G-TFFF	Cessna 500 Citation	0176	TBT (Transport) Ltd (G-BCII/N176CC)
G-TOMF	PA-34-220T Seneca III	8133191	Lane Investment Co Ltd (G-BJEO/N8424V)
G-USAF	T28C Trojan	226-166	M. B. Walker (140589 USN)
G-VIEW	Vinten-Wallis WA-116/100	002	W. Vinten Ltd
G-WIDE	Short SD3-60	SH3601	Short Bros Ltd

James Goulding

The Italeri LA-5FN

THE 1982 Italeri catalogue shows as a new item a 1:72 scale kit of the Lavochkin LA-5FN radial-engined single-seat fighter. However this model is in fact a re-release of a kit first issued some years ago. Originally the decal sheet had markings for three Russian AF aircraft, but the new version seems to be orientated towards the German market.

One of the two subjects featured on the marking's sheet is the LA-5FN captured and test flown by the *Luftwaffe*; the box art also shows this aircraft as do the photographs of the completed model in the instruction leaflet.

I would disagree with the remarks included in the short history of the fighter, which state that in general the Russian AF was no match for the *Luftwaffe*. While this was certainly true of the early part of the war on the Eastern Front (when the initial onslaught caught the Russian AF unprepared and during a period of re-equipment with modern aircraft), by the time of the great armour battles around Kursk and the subsequent German retreat, the Russian AF had established air superiority over many of the battlefields. German ground forces complained about the lack of air support and the constant harassment from Russian light bombers, Ilushin Il-2 'Shturmoviks' and strafing fighters. Without air superiority over the battle zones it is certain that the Il-2 would not have been the devastating weapon it was against armoured forces. The main factor was that the Russians were using aircraft ideally suited to the conditions on the Eastern Front.

The LA-5FN was first used in large numbers at Kursk in July 1943, and was an uprated development of the LA-5 (which was a radial-engined redesign of the LaGG-3 inline-engined fighter, originally designated LaG-5). The LA-5 made its operational debut over the Stalingrad battlefield in November 1942. An advanced feature of the engine installation was the fan cooling and close grouping of the exhaust pipes as on the FW190, and it is interesting to speculate on whether or not the Russian designers had access to a captured FW190.

The first prototype LaG-5 — modified by installing a Shvetsov M-82 14-cylinder radial engine of 1,600hp in an LaGG-3 airframe — was completed towards the end of 1941, so either the engine installation was an independent arrival at the same design conclusions or the Russians captured an FW190 very soon after the German invasion began.

The LA-5FN, which had the M-82 FN engine of 1,700hp, was ideally suited to combat conditions experienced on the Eastern Front. It was a strong, unsophisticated aircraft which was reliable, easy to maintain and repair under the primitive forward base conditions prevailing in the

constantly-changing battle areas. Even more important, it was fast and very agile, and in several important respects was superior to the FW190A and Bf-109G at the low to medium altitudes at which much of the air fighting was taking place. It had a top speed of 403mph and was about 20mph faster than the German fighters at low altitude.

The Italeri leaflet also states that LA-5FNs were used by the *Luftwaffe*, but as far as I am aware this was purely for evaluation of the fighter's qualities and weaknesses. The number of captured aircraft flown by the *Luftwaffe* must have been small.

Italeri's LA-5FN is an excellent replica of this fine fighter. The outline shape appears to be close to the original, except that the wing tips should be a little thinner in section, although these can easily be filed down. The cockpit is small, but there is detail on its walls which enhances the appearance. Surface engraving is delicate and typical of Italeri's high standards. Although the engine is well modelled little of it can be seen because of the cooling fan behind the propeller.

The initial LaG-5s, which were re-engined LaGG-3s and LA-5s, did not have the cut back of the rear fuselage spine and rear view hood of the later production fighters. It would be easy to modify the Italeri model to these variants.

The two subjects on the decal sheet are the captured *Luftwaffe* aircraft (which is shown in photographs in various publications and which I believe is an LA-5) and a Russian AF LA-5FN.

This excellent kit costs around £1.25. Our sample of the Italeri LA-5FN was kindly supplied by Bell Toys Ltd.

A 'Dak' re-issued

Italeri's superb Douglas DC-3 kit, already reviewed in 'airkits' when originally released as a C-47 Skytrain/Dakota, has now been re-issued as a civil DC-3.

In the Italeri and ESCI 1:72 scale kits, we are fortunate to have two very fine models of this classic Douglas transport aircraft. There is little to choose between them in overall quality and accuracy, but my own preference is for the Italeri version because it has a slightly straighter top line to the fuselage. Either model, however, delights the eye, looking so much in character with the graceful Douglas aircraft.

My only disappointment in the re-issued Italeri kit is that it is almost unchanged from the C-47 issue. In the interior the C-47 bench seating along each side of the fuselage is retained, albeit slightly modified by the removal of the individual canvas seats. It would have been desirable to have a standard airline interior with seats in rows, but Italeri has obviously taken the less costly option.

Because of the urgency in getting post-WW2 operations re-started many of the ex-war-time C-47s still retained sideways bench seats, and therefore the Italeri kit is not entirely incorrect, but this was only a temporary expedient and normal airline seating in rows soon became standard.

The Italeri kit gives markings for British European Airways, Air France, Lufthansa, Alitalia, Royal Dutch Airlines, Sabena and Swiss Air lines. There is also an unknown Chinese airline DC-3. Unfortunately the 'cheat lines' of the various carriers, some of which are very complicated, are not included on the sheet containing the airline names and other markings. I do not know if these are included on a separate sheet and were accidentally omitted from my sample, or whether these have been left to the modeller to paint on the model for economy reasons, which in view of the complication is certainly difficult.

The Italeri DC-3 kits cost £2.50 for each version. Our review sample was kindly supplied by Bell Toys Ltd.

A new Stuka

The latest kit in the Airfix 1:48 scale range is a fine Junkers Ju87B/R.

Apart from the rather crude, early 1:72 scale Junkers Ju87B produced by Airfix many years ago, it was an amazing fact that most of the 'Stukas' produced for a long period were of the later Ju87D variant and the version associated with the most successful and important period of the aircraft's career, the Ju87B, was ignored. Eventually, this strange state of affairs was put right with excellent models of the earlier version produced by several manufacturers in a variety of scales.

Airfix' new model is highly detailed, and very well moulded. External engraving consists of panel and skin lines, both raised and indented, and with extensive rivet lines.

A feature of this model is the well-appointed cockpit area, which is greatly enhanced by the structural detail shown on the walls of the fuselage in the cockpit region. In addition to structure there are well detailed panels and other components which add to the general cockpit clutter in a realistic manner. The pilot's instrument panel too has been modelled instead of using a decal, which I think is more satisfactory in this scale. The cockpit floor is a separate component and attached to this are the crew seats, control column and central 'black boxes'. Two crew figures very well modelled, are included, and there is a rear gun.

There is the usual 500kg bomb mounted on its swinging cradle under the fuselage and there are four 100kg bombs under the outer wings, but these can be replaced by drop tanks.

Altogether this is a well-researched and planned kit, with a very accurate outline and clean moulding. On the review sample there was a little sinkage of the plastic on the outer skin of the fuselage sides, in the area of the internal side detail, but in fact this gave a realistic worn and dented look so often seen on much-used aircraft.

Markings are given for a Ju87B-2 of 4 *Staffel*, 11 *Gruppe*, *Stukageschwader* 2 Immelmann, operating in North Africa during 1941-42. The second version is a Ju87R-1 of 6 *Staffel*, *Stukageschwader* 1, operating in Russia during the period 1941-42.

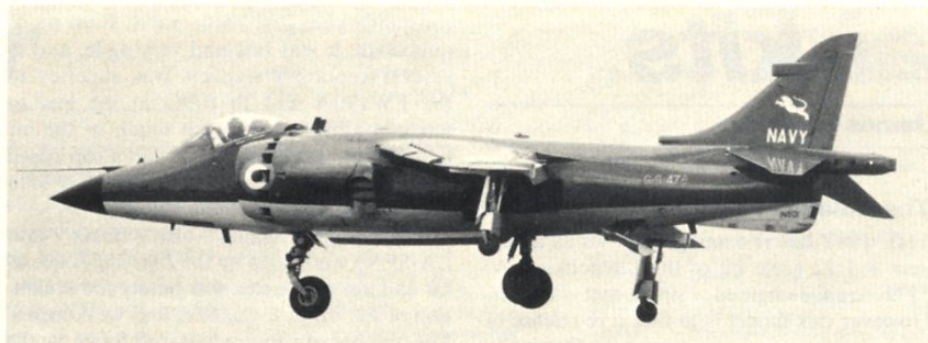
THE 50th SBAC Show and the 25th to be held at Farnborough will go on record as being a vintage year with a huge attendance to see the largest number of new aircraft on show for many years. Despite all the doom and gloom and a paucity of announcements for new airliners, the general feeling among the companies present at Farnborough 82 was cautious optimism that the worst might now be past and that orders might pick up again over the next couple of years. Highlights were of course the appearance of the Rockwell B-1, the new Boeing and Airbus airliners, the debut of the BAe 146-100 and -200 and the host of light turboprops and helicopters. There were more new types making their first appearances at Farnborough, particularly on the commercial side, than we have seen since the first European Show.

There was certainly plenty for the visitor to see and little hope of getting round it all in just the day. With a new exhibition hall adding to the already extensive covered area and a huge static display of machines and equipment spreading down to the runway, the SBAC's claim that it was the biggest Farnborough ever was born out. In the exhibition the focus of a great deal of attention was on the unveiled BAe Agile Combat Aircraft (ACA), only rivalled by the post Falklands weaponry put on show by a number of firms.

It came as no surprise that British Aerospace provided the largest contingent of types for the show. During the trade days a re-engined BAe 125-F400B 3D-AVL was on static display, as was Jaguar International G-27-367 which is destined for the Indian Air Force as JS135. The latter was replaced by the RAE Jaguar T2 XW566 for the public days. The Hawk on show was a T60 for the Zimbabwe AF while the company demonstrator G-HAWK visited each day. Nimrod AEW3s were also daily visitors with the production aircraft XZ287 appearing on at least one of the days. Unfortunately the programmed visit of the first VC10 K2 ZA141 was an exception rather than the rule. The Sea Harrier never ceases to impress and the near vertical climb away under forward power by the first Sea Harrier for the Indian Navy was breathtaking. The Royal Navy managed to put in four aircraft from No 899 Squadron to give support to this VTOL interlude.

Of all the jet fighters in the display the most spectacular performance came from the F-16A Fighting Falcon. From take-off to touchdown it remained within the airfield boundary, manoeuvring violently in all planes and producing smoke from wing-tip canisters adding further to the effect. This clearly demonstrated that the restrictions of the watchdog flying control committee did not really prevent such a display despite the views of some of the participants. Peter Phillips in the new Fieldmaster also showed how an experienced display pilot can fly any aircraft to good advantage, here demonstrating crop-spraying in a very restricted flying area.

The usual competition for the shortest take-off and landing was between de Havilland Canada, Shorts and Dornier, with pre-



Above: John Farley gave his usual demonstration of precision flying in the Sea Harrier, but this time in an aircraft destined for the Indian Navy. Photo: Peter R. March

airview SPECIAL



REPORT

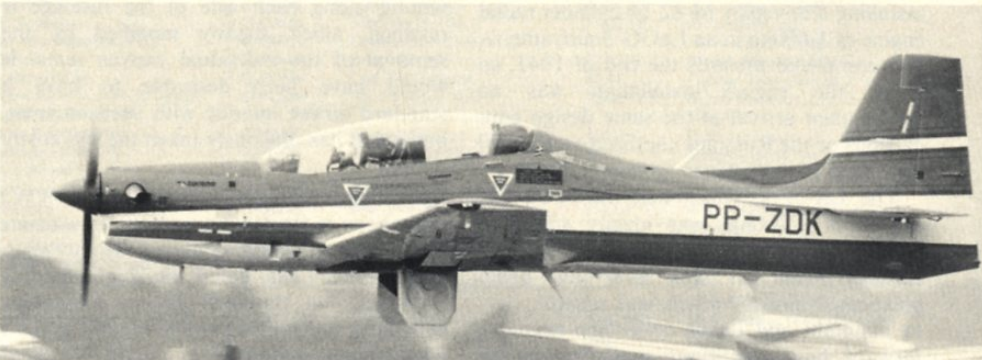
Peter R. March



Above: The stretched BAe146-200, G-WISC, was one of three of the type on display at Farnborough; the other two being -100 variants. Photo: Peter R. March

Right: Among the French participation at the display was this Mirage F1C equipped for long-range reconnaissance. Apart from the centreline 'recce' pod and inboard fuel tanks, the aircraft is also carrying ECM stores and wingtip Magic missiles. Photo: Peter R. March

Below: The Embraer Tucano military trainer lifts off at the start of its Farnborough display debut. Photo: Graham Finch



vious winners Pilatus opting out this year by keeping the Turbo-Porter firmly in the static park. The award this year must surely go to the Buffalo, appropriately flown by a former 'Red Arrows' pilot, with the Skyvan close behind. The wooden spoon for the longest take-off run would again go to the Microjet 200B which seemed to require nearly two-thirds of Farnborough's runway to crawl into the air. Helicopter displays cannot have the same impact when they are required to remain so distant from the crowd line because of their relatively small size and low speed. Only the YAH-64 Apache really caught the attention of spectators with an impressive flying routine.

At the other end of the scale the Airbus

Farnborough 82 Checklist

Aeritalia AP68TP — I-RAIK
Aeritalia P68 Observer — D-GEWG
Aermacchi MB339A — MM54487, MM54443/I-TOCA
Aermacchi MB339K — I-BITE
Aerospaziale AS355F Ecureuil II — F-BGON
Aerospaziale AS332B Super Puma — F-WZLB
Aerospaziale SA365N Dauphin II — F-WZJS
Aerospaziale SA342M Gazelle — F-WXFI
Aerospaziale TB-30 Epsilon — O1/VO, O2/VJ
Aerospaziale TB-9 Tampico — G-BKEN
Aerospaziale TB-10 Tobago — G-BKEM
Aerospaziale TB-20 Trinidad — G-TBXX
Agusta A109A — I-DVCM, I-DACC, I-DACD
Agusta AB412 — I-DACB
Agusta AB212ASW — MM81098 (7-53)
Agusta S211 — I-SIJF
Agusta SF260TP — I-TPTP
Agusta SF600TP — I-CANG
Agusta SM1019E — I-AFRI
Airbus Industrie A310 — F-WZLI
Airmass Sunset/Sunburst/Sunlight microlights — unregistered
Airship Industries Skyship 500 — G-BIHN
Beech Super King Air B200 — G-BIZX
Bell 206B JetRanger III — VH-DIK
Bell 214ST — G-BKFN
Boeing 727-100 — N199AM
Boeing 757 — N505EA
Boeing 767 — N102DA
BAe 125 srs F400B — 3D-AVL
BAe 125 srs 700B — G-OBAB
BAe 146-100 — G-OBAB, G-SSCH
BAe 146-200 — G-WISC
BAe 748-2B — G-11-22
BAe Coastguarder — G-BDVH
BAe Concorde — G-BOAF (Sunday only)
BAe Jetstream 31 — G-TALL, G-JBAE, G-JSSD (3001)
BAe One-Eleven — XX105 (RAE Bedford)
BAe Hawk — G-HAWK, T60 G-9-490/604 (for Zimbabwe AF)
BAe Sea Harrier FRS1 — XZ439, XZ457, XZ460 (899 Sqn)
BAe Sea Harrier FRS51 — IN601 (Indian Navy)/G-9-478
BAe Jaguar International — G27-367 to be JS135 (Indian A/F)
BAe Jaguar T2 — XW566 (ETPS)
BAe Nimrod AEW3 — XZ286, XZ287
BAe Tornado F2 — ZA254
BAe Tornado GR1T — ZA368
BAe VC10 K2 — ZA141
Canadair Challenger — N637ML
Caproni Vizzola C22J — I-CAVJ, I-GIAC
CASA C-101 Aviojet — EC-ZZZ
CASA C-212 Aviocar — EC-DHO
Dassault-Breguet Alpha Jet — F-ZJTJ
Dassault-Breguet Atlantic ANG — 01
Dassault-Breguet Falcon 50 — F-BINR
Dassault-Breguet Mirage F1C — 275/5-NH
Dassault-Breguet Mirage 2000 — 04
Dassault-Breguet Mirage 2000B — 01
Dassault-Breguet Mirage 4000 — 01
Dassault-Breguet Super Etendard — 31
de Havilland Canada DHC-5D Buffalo — C-GCTC
de Havilland Canada DHC-6 Twin Otter 300M — C-GFJQ
de Havilland Canada DHC-7 Dash Seven — 132002 (CAF—No 412 Sqn)
Dornier Do 128-6 — D-IBUF
Dornier Do 228-100 — D-ICOG
Dornier Do 228-200 — D-ICDO
Dragon Light Aircraft Dragon — G-MMAC
Edgley Optica — G-BGMW
Eipper-Formance Quicksilver MX microlights — unregistered
Embraer EMB-110-41 Bandeirante — PT-SFA
Embraer EMB-121 Xingu II — G-XTWO
Embraer EMB-312 Tucano — PP-ZDK
Enstrom 280C Shark — G-OFED (North Hall), G-BKCO
Euro-Wing Goldwing — G-MBZH
FAC Indaer T-35 Pillan — CC-EFP
Fairchild A-10A Thunderbolt II — 81-0009/WR (USAF—81st TFW)
Fairchild-Swearingen Metro III Sentry — N3108X
Fairchild-Swearingen Merlin IVC — N3010Q
Fokker F27-500 — PH-FSK
Fokker F28-4000 — PH-ZCD
Gates Learjet 55 — N3797C
General Dynamics F-16A Fighting Falcon — 661 (RNorAF)
Grob G109 — G-BJVK
Gulfstream American Commander 1000 — OY-BPA
Gulfstream American Gulfstream III — F-313 (RDANAF—No 721 Sqn)
Hughes 300C — G-BNBH
Hughes 500D — G-SOOD (North Hall)
Hughes 500MD — N8337F
Hughes AH-64A Apache — 22249
ICA-Brasov IAR-825TP — YR-IGB
ICA-Brasov IAR-28M2A — YR-1026

ICA-Brasov IS-29D2 — YR-1028
ICA-Brasov IS-32 — YR-1027
ICA-Brasov IAR-827 TP — YR-MGF
Lockheed C-130K Hercules C3 — XV212, XV294
Lockheed TR-1 — 80-1068
Lockheed P-3C Orion — 160761 (USN—VP-44 Sqn)
Lockheed L10 Electra — NC5171N
MBB Bo105CB — D-HDMU
MBB BK 117 — D-HBKC
MBB Fantrainer — D-EATJ
McDonnell Douglas KC-10A Extender — 79-0433 (USAF—2BW 32nd ARS)
McDonnell Douglas F-15C Eagle — 79-0036/BT (USAF—36th TFW)
Microjet 200B — F-WZJF
Mitsubishi Diamond I — N300DM
Nash Petrel — G-AXSF
NDN-1 Firecracker — G-NDNI
NDN-6 Fieldmaster — G-NDRC
Piaggio P166-DL3 — I-PIAQ
Pilatus PC-6B2 Turbo Porter — HB-FHM
Pilatus PC-7 Turbo Trainer — HB-HAO, HB-HOO
Pilatus Britten-Norman BN-2T Turbine Islander — G-HOPL
Pilatus Britten-Norman BN-2T Maritime Defender — G-MAFF
Piper Cheyenne III — G-BJIZ
Rockwell International B-1A-NH — 76-0174
Saab-Scania JA37 Viggen — 37322/62 (RSwed AF—13F Sqn)
/59 (RSwed AF—13F Sqn)
Shorts Skyvan — G-BJDC
Shorts 330 — G-BKDO
Shorts 360 — G-WIDE, G-ROOM
Sikorsky S-76 Mk II — N5415X
Sikorsky UH-60A Black Hawk — 82-3548
Slingsby T-67B — G-BJIG, G-BJCY
Slingsby T-67M Firefly — G-BJNG, G-BKAM
Valmet L-70 Miltrainer — OH-VAA
Valmet PIK-23 Towmaster — OH-TOW
Vinten-Wallis WA116-100 — G-SCAN, G-VIEW
Westland Lynx — G-LYNX
Westland Lynx HAS3 — ZD253
Westland Sea King HAS5 — XZ916
Westland 30-100 — G-BIVVY
Hawk T1 (replica) — XX162
Jaguar GR1 (replica) — XX824
Wessex HU5 — XS241 (RAE), XS482 D/A
Puma HC1 — ZA941 (RAE), XW236 CG
Chinook HC1 — ZA710 (BC) 18 Sqn
Spitfire IIA — P7350 (SH-D)
Hurricane IIc — PZ865
Lancaster I — PA474
Swordfish — LS326
Sea Fury — TF956
Sea Hawk — WV908
Pitts S1 — G-BBOH
Pitts S2A — G-WREN, G-ROLL
Hawk T1 (Red Arrows) — XX227, XX251, XX252, XX253, XX257, XX259, XX260, XX266, XX304, XX306

Among the wrecks and relics visible on the north side of the airfield are believed to be:

Comet 1XB — G-AOJT
Comet 2E — XN453
Trident 1 — G-ARPC
Hastings C2 — WD480
Vulcan B1 — XA903
Gannet AEW3 — XL471
Buccaneer S1 — XN960
Whirlwind HAR10 — XP356

This checklist covers the participants in the Farnborough 82 programme and includes the aircraft on display on the ground (including the exhibition area) and in the air. As usual there was some variation in participation through the eight days of the show. Several of the static aircraft left at the end of the trade days, including the Boeing 727, Learjet 55 and Jaguar International. Other aircraft arrived for the public days only, including the Lockheed 10A Electra and Jaguar T2 XW566. The daily Nimrod visitor changed to fit in with the flight test programme and the VC10 K2 made occasional appearances throughout the week. No attempt has been made to list the hordes of visiting helicopters, both civil and military, which operated into the Farnborough heliport each day. Listed at the end are some of the more substantial hulks that visitors could see on the northern side of the airfield.

A310 made its debut in a striking colour scheme and flown to show itself to full advantage in a manner reminiscent of John Cunningham's Comet displays in the late 1950s. It was a great pity that the two new

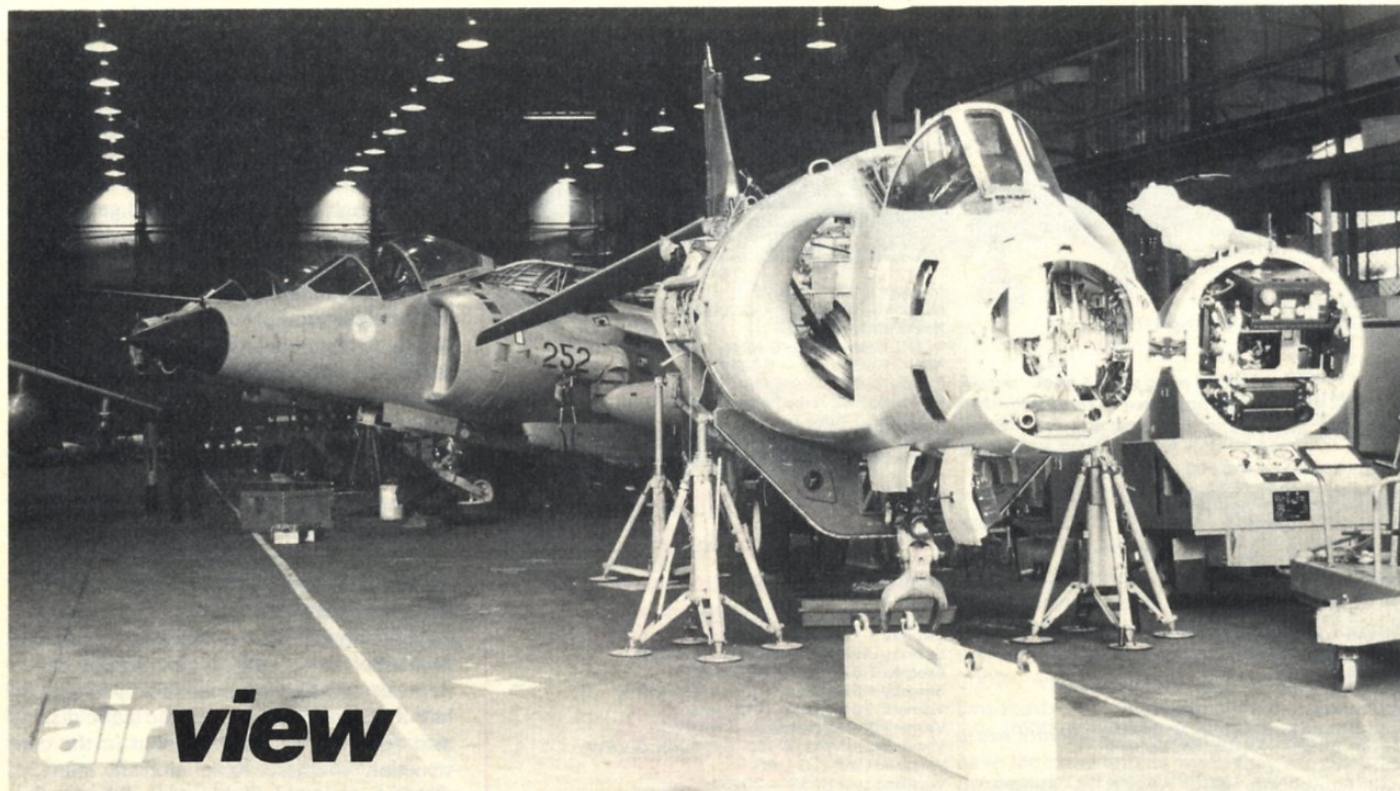
Boeing airliners were not demonstrated in a similar manner. Visitors on the trade days were at least able to see a take-off and landing by the 757 and 767, but on the public days they were firmly entrenched in

the static park. An airliner of a completely different generation, the pre-war Lockheed 10A Electra, was a bonus addition to the static display at the weekend. On the final day of the show there was an appearance by a British Airways Concorde G-BOAF, a just reward for the visitors who had fought their way through huge traffic jams to get into the airfield and were going to have even greater difficulty getting away.

The additional flying display items for the public days comprised the 'Red Arrows', Marlboro Pitts and the RN Historic Flight and Battle of Britain Flight. The former comprised the Sea Fury and Sea Hawk flying in together and the Swordfish, while the latter showed newly painted Spitfire P7350 coded SH-D and Hurricane PZ865 once again wearing the legend 'The last of the many'. Farnborough 82 was also unique in having an airship participating in the flying. The Airship Industries A500 G-BIHN flew in from Brooklands each day to give a majestic display, reflecting a bygone age and hopefully introducing a new era of lighter than air commercial craft. The presence of half a dozen microlights in the static display also reflected the sudden boom in the construction of these basic aircraft, some of which were more in keeping with the first SBAC show than the golden anniversary year. The British Air Ferries Dragon microlight, looking like a part completed Luton Minor, looks to have a promising future and should be appearing in considerable numbers next year when full production gets into its stride.

No look at this year's show should leave out mention of the French participation with a quartet of Mirages, the new generation Atlantic and the new helicopters and Epsilon trainer. The Italians also came in strength and included two examples of the Caproni Vizzola C22J minijet. Two new aircraft from South America, the Embraer Tucano and the FAC T-35 Pillan, the latter derived from the Piper Cherokee Warrior, showed the growing strength of the aircraft industry away from the USA. Finally to return home there were the first signs of a re-birth of the light aircraft industry with Slingsby showing the Fourier derived T-67A and the new all GRP T-67M. Vinten showed two examples of the Wallis WA-116 with the new Weslake engine, in naval and army configurations. It is to be hoped that Farnborough 84 will show these two manufacturers with busy order books and good production runs behind them. This also goes for the other end of the spectrum with the BAe 146 desperately in need of a good boost from substantial orders and Shorts looking for a widening market for the 330 and 360 family.

The 1982 SBAC Show with over 150 participating aircraft was a very different event than the first show at Hendon in 1932 when it was a hangover from the big RAF Pageant. By coincidence one of the machines on show that year, the Handley-Page Gugnunc G-AACN survives today with the Science Museum Collection at Wroughton, Wilts and was available for inspection at the annual Science Museum Open Day on 12 September.



Peter R. March

After the Falklands

DETAILS about aircraft losses on both sides in the Falklands conflict are now beginning to emerge. Sea Harriers written off are believed to be six in number: XZ450 of No 800 Squadron at Goose Green on 4 May; XZ452 and XZ453 both ex-No 899 Squadron in the mid-air collision on 6 May; XZ456 also ex-No 899 Squadron from battle damage on 28 May; ZA174 of No 809 Squadron was lost off HMS *Invincible's* ski ramp on the same day as was ZA192 which suffered battle damage resulting in its loss. Back at Yeovilton a seventh Sea Harrier XZ438 was destroyed when differential under-wing fuel tank loads caused it to roll on take off from the ski-ramp.

The RAF lost three Harrier GR3s during the conflict, all serving with No 1 Squadron at the time. These are believed to be XZ963 (14), XZ972 (33) and XZ985 (34), all three being the result of battle damage.

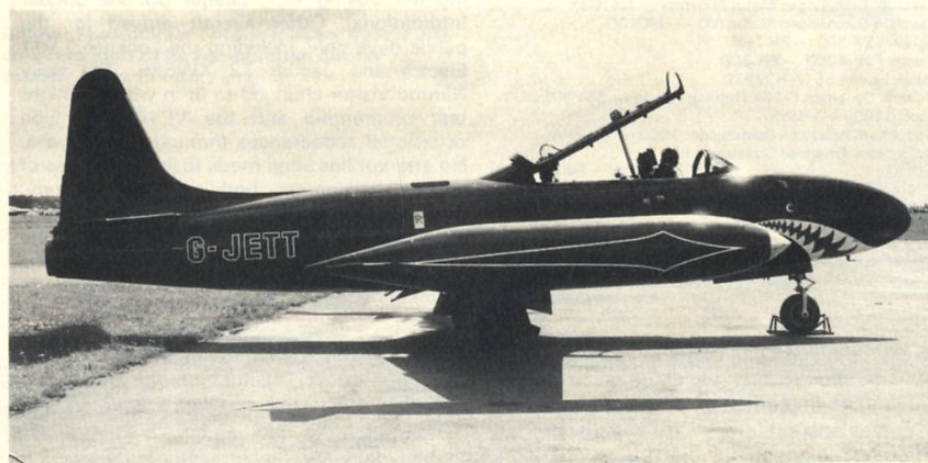
The Argentine forces lost the majority of the aircraft used over the Falklands. When hostilities ceased the following Pucaras, most of them wrecked, were scattered around Port Stanley airfield: A-509, A-513, A-514, A-515, A-522, A-528, A-532, A-533, A-536 and A-549, while at Pebble Island were A-520, A-529 and A-556. Other machines noted include Aeromacchi MB339s 4-A-110, 4-A-112 and 4-A-116; Bell UH-1s AE-406, AE-412, AE-417, AE-418, AE-422 AE-424 and 656; Skyvans PA-50 and PA-54; Bell 212s H-83 and H-85, Chinook AE-520 and Puma PA-12. Many of the aircraft are being brought back to the UK. The first to arrive were Agusta A109s AE-331 and AE-334, while others include Pucaras AE-549 and AE-515, both of which are now at A&AEE Boscombe Down where AE-515 is being pre-

Above: Engineers at RNAS Yeovilton worked round the clock to overhaul returning Sea Harriers from the South Atlantic to prepare them for service on board HMS *Illustrious*.
Photo: Peter R. March

pared for flying and has been allocated the RAF serial ZD485. Former Argentine Army Chinook AE-520 and Navy Puma PA-12 arrived at Portsmouth on the m/v *Tor Caledonia* on 19 August and after displaying at the Navy Day went to Fleetlands for possible future use by the RAF.

Conversion of Vulcans to the K2 tanker role for No 50 Squadron at Waddington is now known to involve six aircraft modified by BAe at Woodford. The first was XH561 (ex-No 50 Squadron), followed by XJ825. Subsequent deliveries have been XM571 (ex-No 101 Squadron), XL445 (ex-No 44 Squadron), XH560 (ex-No 44 Squadron) and XH558 (ex-No 27 Squadron).

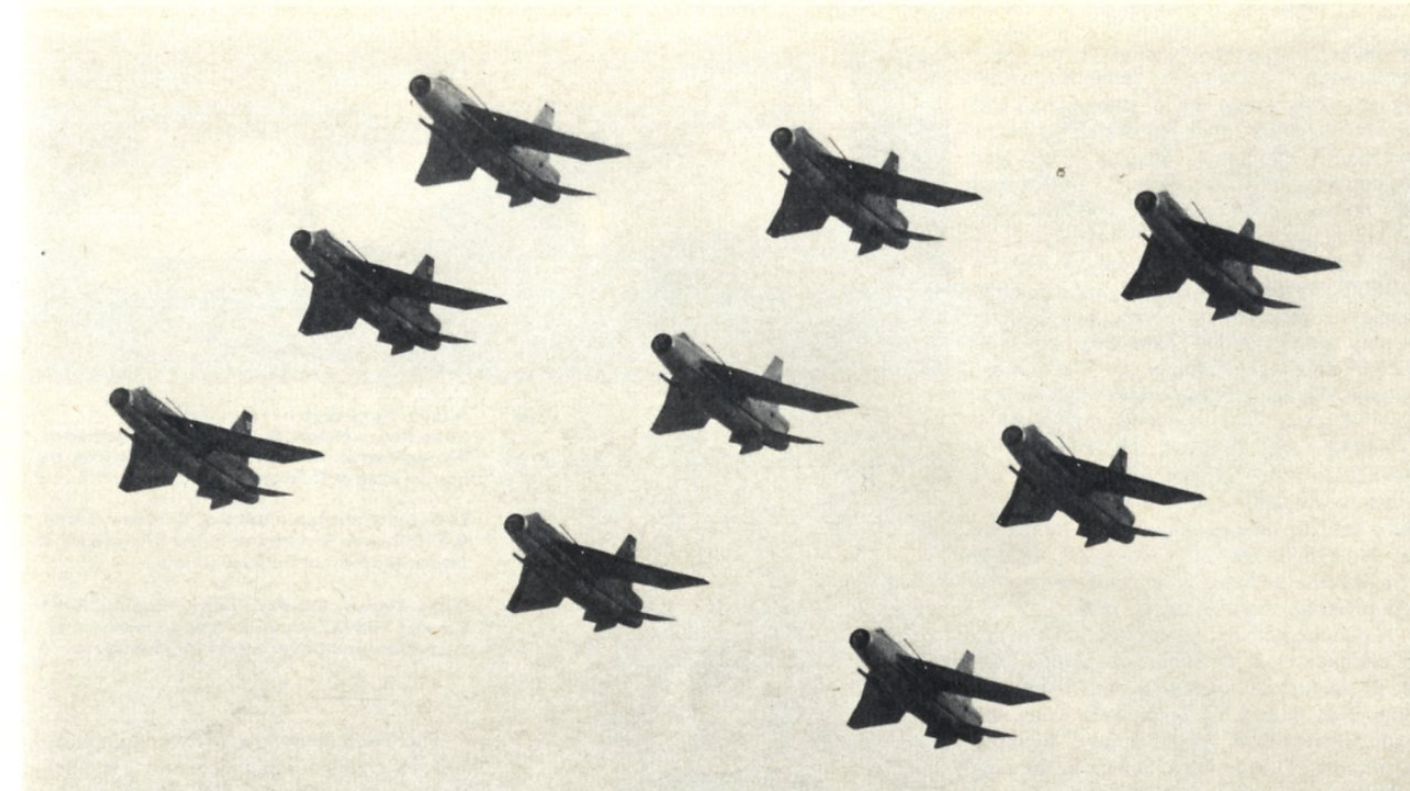
Below: T-33A-N, G-JETT (ex-G-OAHB) made its display debut at Coventry on 15 August.
Photo: Peter R. March



The delayed run-down of Vulcan operations has now been re-scheduled — No 101 Squadron disbanded on 4 August, No 44 Squadron will terminate on 21 December while No 50 Squadron will soldier on until the VC10 is fully operational which seems likely to be in early-1984.

airshow 82

The International Air Day at St Mawgan on 11 August lived up to its name with excellent support from NATO air arms and the French AF. Highlights of the static display were a pair of Italian Air Force MB339s (MM54448 and MM54454), Norwegian F-16As (283 and 659), and German Navy RF-104G Starfighter (21+17 of *Mfg-2*). The flying display included five different French Navy types: Super Etendards 33 and 34, Atlantic 47, Alize 59, Nord 262A 72 and pride of place SP-2H Neptune 147563. The appearance of the Portuguese aerobatic team 'Asas de Portugal' with its Cessna T-37s



2423, 2414, 2404, 2430, 2415, 2407 and 2401 disproved the report that the team had been disbanded at the end of last season. They went on to appear on 14 August at the USAF Open Day at Alconbury. This 'mini-Mildenhall' also turned out to have a bigger than usual international content, at least in the static display. Of particular interest was RDAF TF-104G Starfighter RT-660 from No 726 Squadron, French AF Mirage IIIE 607/4-AP from *Esc 1/4* and West German

F-4F Phantom 37+44 from *Jg 71* in a new colour scheme. For many of the visitors to Alconbury the highlight was the debut of Lindsey Walton's F4U-7 Corsair 133722/NX1337A resplendent in its French Navy Suez invasion colour scheme, which had positioned into the USAF base a few days earlier on delivery from the USA. It was flown very confidently by Wg Cdr John Allison who gave a further display the following day at Coventry.

Above: A rare sight — a formation of nine Lightning F6s from Nos 5 and 11 Squadrons at Binbrook on 28 August. Photo: Peter R. March

Below: The first English Electric P1A, WG760, at Binbrook on 28 August, having arrived in July from Henlow where it had been resident for many years. Photo: Peter R. March



The RAFA Midlands Air Show seems to get bigger each year and attracts enormous public support showing the return for investing in participation by a British Airways Concorde. This year G-BOAF gave a sparkling 25-minute display. It was supported by BAe One-Eleven G-BGKE and in contrast Dakotas G-AMPO and G-AGHY were much in evidence. As well as the Corsair, newly restored T-33A(N) G-JETT, formerly G-OAHB gave its public display debut. Among a very varied static display the Boscombe Down Sea Fury T20 VZ345 and RDAF Supporter T-430 were notable. An unusual flying item was a formation flypast by Rolls-Royce HS125 G-AWYE and Cranwell Jet Provost T5 XZ323, to mark the anniversary of the RR Viper powerplant. The Falcons parachutists were seen to have relinquished a Puma for the No 115 Squadron Andover C1 XS596, bringing the tactical transport back out of retirement for this operational task.

Not unexpectedly Lightnings were much in evidence at RAF Binbrook's Open Day on 28 August. A formation of nine aircraft from Nos 5 and 11 Squadrons using the name 'Brown Bear' gave a series of flypasts. A number of these were painted in the new light grey interceptor colour scheme. Taking pride of place in the static line-up was the prototype English Electric P1A WG760, forerunner of the Lightning. It had been moved from Henlow in July. Also on show was Vulcan B2 XM607 of No 44 Squadron, the first aircraft to drop bombs on Port Stanley airfield. It was displayed with its bomb-bay open to reveal the additional fuel tanks and an array of dummy bombs. Nimrod MR2 XV234 also revealed its Falklands connection and carried underwing missile racks and nose refuelling probe. Display Harrier GR3 XZ995 (AO) carried No 3 Squadron markings, but is believed to be on loan to 233 OCU. This aircraft, together with XV753 (M) moved on to Leicester for the following day's air display, which was yet another well attended event which presented a good and varied flying programme.

The Diamond Jubilee King's Cup Air Race took place at Finningley as part of the Battle of Britain Open Day on 4 September. With a smaller than usual entry field, but now supported by all three services. The race was won by Monsun G-AZOB with SIAI SF260 G-BDEN in second place. Cricketer Ian Botham was co-pilot in Cessna 310Q G-BAUE, sampling yet another sport. Hopefully he will have more success with this one than his attempts at motor-racing. Falklands booty appeared at Finningley in the shape of Pucara A-533 and Bell UH-1 AE-413, while RAF warbirds included Hercules and Vulcan tankers. The first Chinook HC1 in the colours of No 7 Squadron confirmed the report that it had been decided to keep this historic unit in existence (having been disbanded last December at St Mawgan) rather than bring back No 66 Squadron. The final item in the flying display was Vulcan B2 XJ782 which was making its last flight prior to retirement as a gate-guard.



Above: Aces High has purchased the Rolls-Royce Heron, G-AOTI; photographed at Wroughton on 12 September, visiting from its normal base at Duxford. Photos: Peter R. March



Left: More shapes in the sky. Cameron Bottle, G-BKES, was first shown at the Bristol Balloon Fiesta and later at Sudeley Castle.

Right: Lindsey Walton's newly acquired F-4U Corsair, 133722, made its first appearance at Alconbury and Coventry on 14-15 August.

Unfortunately the weather was not too kind to Duxford for the joint IWM/Shuttleworth event on 5 September. Heavy outbreaks of rain and poor visibility reduced the number of items. However, it did not prevent the re-appearance of the Bristol Fighter D8096 after its full overhaul and rebuild. It now carries a more authentic WW1 paint scheme. Another welcome sight was the Avro Tutor K3215 back in the air, having been grounded for a couple of years with a blown engine. Also opening its doors to the public in September was the Science Museum Collection at Wroughton, Wilts on the 12th. Although there was no flying display a large number of visitors came to see the aircraft and other historic transport relics. In particular the newly arrived Boeing 247 N18E was the focus of a great deal of attention. The other addition to the Collection from America, the Lockheed L10A Electra N5171N, was of course at Farnborough, its place being taken by Heron G-AOTI which has been acquired by Aces High from Rolls-Royce. The Heron had been used as a crew ferry and returned to Duxford once the Electra was back at Wroughton. Since last year's open day the Collection has also acquired Rapide G-ALXT from Strathallan. A lodger is Whirlwind HAR10 XD163 belonging to the British Rotorcraft Museum.

The West country saw two major hot-air balloon events during this period. The annual Bristol International Balloon Fiesta on 20-22 August attracted over 40 balloons including several 'shapes'. Not surprisingly the event was dominated by Cameron products on the company's home ground. The latest product, Robinson Barley Water shaped balloon G-BKES was given its first tethered flight at the event. The same balloon was also flown free during the British Hot Air Balloon Championships at Sudeley Castle, Glos from 4-11 September, although it was not a competitor. About 30 balloons took part in the competitions which tested the skill of the pilots with some very hard tasks in a mixture of weather conditions. Between these two events a spectacle of a different kind took place at Ashton Court, Bristol on 3 September when Don Cameron made a test flight carrying a hang-glider below V-77 G-BGAZ as a prelude to Rory McCarthy's attempt on the 32,000ft height record. This was followed by the first free flight of the massive chateau-shaped hot-air balloon G-BKBR.

Finally, the last two events of the 1982 season taking place this month are the End of Season Flying Day at Duxford on 17 October and the Informal Flying Occasion at Old Warden on 31 October. Looking ahead now into the depths of the winter, the New Year's Day Fly-in at Compton Abbas is once again scheduled and the Icicle Balloon Meet at Marsh Benham has been programmed for 8-9 January 1983.

For some of this month's contributions we would like to thank: R. Bonser, D. Conway, G. Finch, J. Guthrie, P. Hammond, A. P. March, R. Rudhall, K. A. Saunders, E. A. Shackleton and R. Wright also the publications: *Air Scotland*, *Aviation Ireland*, *British Aviation Review*, *Flightpath*, *Hawkeye*, *Humberside Air Review*, *Irish Air Letter*, *Prestwick Airport Letter*, *Scottish Air News*, *Skyward*, *South West Aviation News*, *Stansted Aviation Newsletter* and *Vintage News*.

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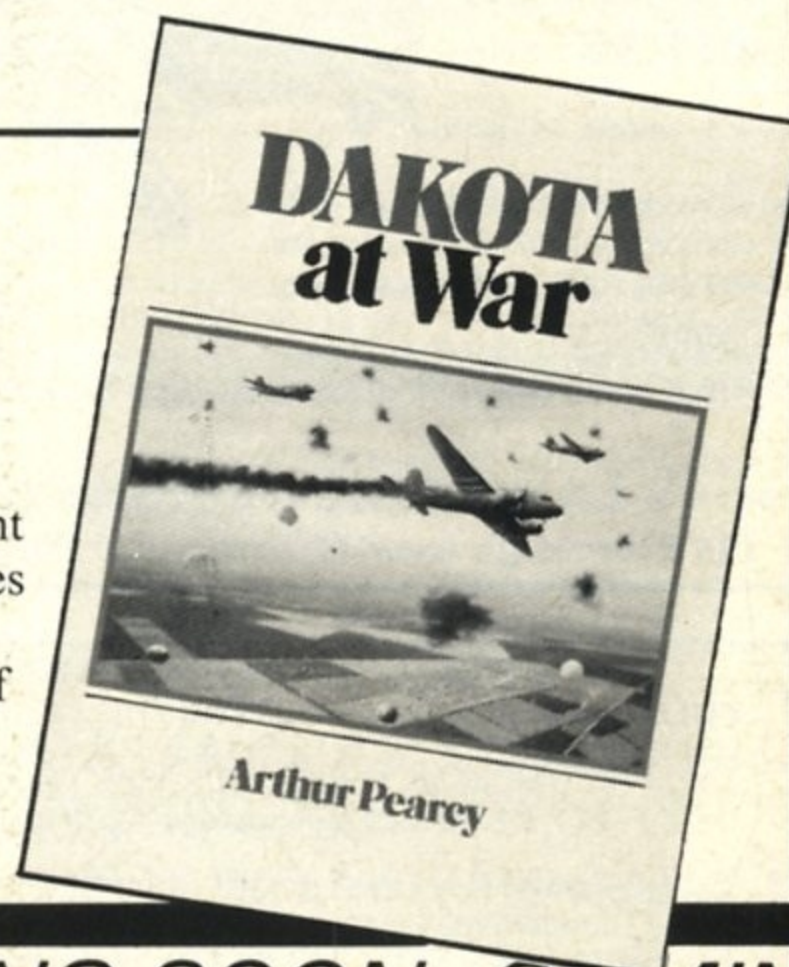
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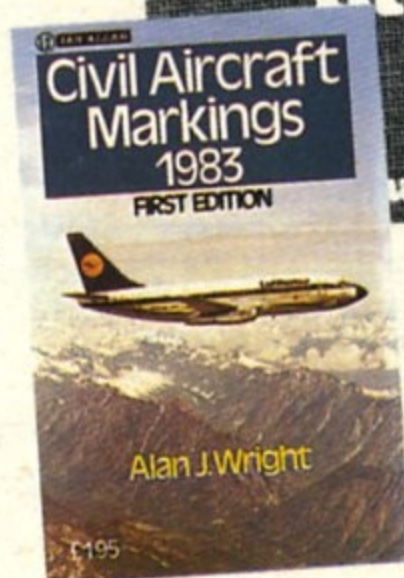
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